



Service Manual

Service Manual

L704i



Model : L704i



Table Of Contents

1. INTRODUCTION	5	4.11 Slide Close / Open Troubleshooting ..	112
1.1 Purpose.....	5	4.12 Main LCD Troubleshooting	113
1.2 Regulatory Information.....	5	4.13 Receiver Path	114
2. PERFORMANCE.....	7	4.14 Headset path.....	116
2.1 System Overview	7	4.15 Speaker phone path.....	118
2.2 Usable environment.....	8	4.16 Main microphone	120
2.3 Radio Performance	8	4.17 Headset microphone.....	122
2.4 Current Consumption.....	14	4.18 Vibrator	124
2.5 Antenna BAR	14	5. DOWNLOAD	125
2.6 Battery BAR	15	5.1 Introduction	125
2.7 Sound Pressure Level.....	16	5.2 Downloading Procedure.....	125
2.8 Charging	16	5.3 Troubleshooting Download Errors	139
3. TECHNICAL BRIEF	17	5.4 Caution.....	143
3.1 General Description	17	6. BLOCK DIAGRAM	146
3.2 GSM Mode.....	19	6.1 GSM & UMTS RF Block.....	146
3.3 UMTS Mode.....	23	6.2 Interface Diagram	148
3.4 LO Phase-locked Loop	26	7. Circuit Diagram	153
3.5 Off-chip RF Components	28	8. BGM Pin Map.....	163
3.6 Digital Baseband(DBB/MSM6280).....	36	9. PCB LAYOUT	165
3.7 Block Diagram(MSM6280).....	38	10. Calibration & RF Auto Test	
3.8. Subsystem(MSM6280)	39	Program (Hot Kimchi).....	173
3.9. Power Block	46	10.1 Configuration of HOT KIMCHI	173
3.10. External memory interface	51	10.2 How to use HOT KIMCHI.....	174
3.11 H/W Sub System.....	52	11. EXPLODED VIEW &	
3.12 Main Features	71	REPLACEMENT PART LIST	177
4. TROUBLE SHOOTING	77	11.1 EXPLODED VIEW	177
4.1 RF Component.....	77	11.2 Replacement Parts	
4.2. Checking VCXO Block	80	<Mechanic component>.....	179
4.3. Checking Ant. SW Module Block	82	<Main component>	182
4.4. Checking UMTS Block.....	85	11.3 Accessory	202
4.5. Checking GSM Block	94		
4.6. Power ON Troubleshooting.....	97		
4.7. Charger Troubleshooting	100		
4.8. USB Troubleshooting.....	103		
4.9 SIM Detect Troubleshooting	105		
4.10 Keypad Backlight Troubleshooting	111		



1. INTRODUCTION

1.1 Purpose

This manual provides the information necessary to repair, calibration, description and download the features of this model.

1.2 Regulatory Information

A. Security

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part (for example, persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges for your telecommunications services. System users are responsible for the security of own system. There are may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use. The manufacturer does not warrant that this product is immune from the above case but will prevent unauthorized use of commoncarrier telecommunication service of facilities accessed through or connected to it. The manufacturer will not be responsible for any charges that resultfrom such unauthorized use.

B. Incidence of Harm

If a telephone company determines that the equipment provided to customer is faulty and possibly causing harm or interruption in service to the telephone network, it should disconnect telephone service until repair can be done. A telephone company may temporarily disconnect service as long as repair is not done.

C. Changes in Service

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of the phones or compatibility with the net work, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

D. Maintenance Limitations

Maintenance limitations on the phones must be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs expect as specifically noted in this manual. Therefore, note that unauthorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.

1. INTRODUCTION

E. Notice of Radiated Emissions

This model complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.

F. Pictures

The pictures in this manual are for illustrative purposes only; your actual hardware may look slightly different.

G. Interference and Attenuation

A phone may interfere with sensitive laboratory equipment, medical equipment, etc. Interference from unsuppressed engines or electric motors may cause problems.

H. Electrostatic Sensitive Devices

ATTENTION

Boards, which contain Electrostatic Sensitive Device (ESD), are indicated by the  sign. Following information is ESD handling:

- Service personnel should ground themselves by using a wrist strap when exchange system boards.
- When repairs are made to a system board, they should spread the floor with anti-static mat which is also grounded.
- Use a suitable, grounded soldering iron.
- Keep sensitive parts in these protective packages until these are used.
- When returning system boards or parts like EEPROM to the factory, use the protective package as described.

2. PERFORMANCE

2.1 System Overview

Item	Specification
Shape	WCDMA2100,800/GSM900/DCS1800/PCS1900 Slider , Dual mode
Size	99X48X17.7 [mmXmmXmm]
Weight	110g (with 1000mAh Battery)
Power	3.7V, 1000mAh Li-Polymer
Talk Time (with 1000mAh)	Over 150 min. (WCDMA, Tx=10 dBm, Voice call) 350 mA Over 150 min (GSM900, Tx=29 dBm, Voice call) 350 mA
Standby Time (with 1000mAh)	Over 400 hrs (WCDMA only mode, DRX = 2.56s) (under 2.5mA) Over 300 hrs (GSM, Paging period = 5) (under 3.0 mA)
Charging duration	About 2 hours 40 min (0° ~ 40°)
Antenna	Intenna
Main LCD	320X240, 2.2", TFT
Main LCD BL	White LED Back Light
Vibrator	Yes (10 pie coin type)
LED Indicator	Yes
C-Mic	Yes (SMD type)
Receiver	Yes (9X6)
Loud Speaker	Yes (16 pie uni-direction)
Ear phone jack	Yes (10 pin)
SIM Socket	Yes (3.0V/1.8V)
Volume Key	Push Type Side Key(+,-)
Voice Key	Push Type
I/O Connector	ARIB Type A (10 pin + RF coaxial)

2. PERFORMANCE

2.2 Usable environment

1) Environment

Item	Specification
Voltage	3.7V (Typ) (Shut Down: 3.28V)
Operation Temp	-20 ~ +60°C
Storage Temp	-30 ~ +85°C
Humidity	40% ~ 85%

2) Environment (Accessory)

Reference	Spec.	Min	Typ.	Max	Unit
TA Power	Available power	100	220	240	Vac

* CLA : 12~24V (DC)

2.3 Radio Performance

1) Transmitter-GSM Mode

No	Item		GSM		DCS & PCS	
1	Conducted Spurious Emission	MS allocated Channel	100k~1GHz	-39dBm	9k ~ 1GHz	-39dBm
					1G ~ 1710MHz	-33dBm
			1G~12.75GHz	-33dBm	1710M ~ 1785MHz	-39dBm
					1785M ~ 12.75GHz	-33dBm
	Idle Mode		100k ~ 880MHz	-60dBm	100k ~ 880MHz	-60dBm
			880M ~ 915MHz	-62dBm	880M ~ 915MHz	-62dBm
			915M ~ 1000Mz	-60dBm	915M ~ 1000MHz	-60dBm
			1G ~ 1.71GHz	-50dBm	1G ~ 1.71GHz	-50dBm
			1.71G ~ 1.785GHz	-56dBm	1.71G ~ 1.785GHz	-56dBm
			1.785G ~ 12.75GHz	-50dBm	1.785G ~ 12.75GHz	-50dBm

* In case of DCS : [A] -> 1710, [B] -> 1785

* In case of PCS : [A] -> 1850, [B] -> 1910

2. PERFORMANCE

No	Item		GSM		DCS & PCS	
2	Radiated Spurious Emission	MS allocated Channel	30M ~ 1GHz	-36dBm	30M ~ 1GHz	-36dBm
					1G ~ 1710MHz	-30dBm
			1G ~ 4GHz	-30dBm	1710M ~ 1785MHz	-36dBm
					1785M ~ 4GHz	-30dBm
		Idle Mode	30M ~ 880MHz	-57dBm	30M ~ 880MHz	-57dBm
			880M ~ 915MHz	-59dBm	880M ~ 915MHz	-59dBm
			915M ~ 1000MHz	-57dBm	915M ~ 1000MHz	-57dBm
			1G ~ 1.71GHz	-47dBm	1G ~ 1.71GHz	-47dBm
			1.71G ~ 1.785GHz	-53dBm	1.71G ~ 1.785GHz	-53dBm
			1.785G~ 4GHz	-47dBm	1.785G~ 4GHz	-47dBm
3	Frequency Error		±0.1ppm		±0.1ppm	
4	Phase Error		±5(RMS)		±5(RMS)	
			±20(PEAK)		±20(PEAK)	
5	Frequency Error Under Multipath and Interference Condition		3dB below reference sensitivity		3dB below reference sensitivity	
			RA250 : ±200Hz		RA250: ±250Hz	
			HT100 : ±100Hz		HT100: ±250Hz	
			TU50 : ±100Hz		TU50: ±150Hz	
			TU3 : ±150Hz		TU1.5: ±200Hz	
6	Output RF Spectrum	Due to modulation	0 ~ 100kHz	+0.5dB	0 ~ 100kHz	+0.5dB
			200kHz	-30dB	200kHz	-30dB
			250kHz	-33dB	250kHz	-33dB
			400kHz	-60dB	400kHz	-60dB
			600 ~ 1800kHz	-66dB	600 ~ 1800kHz	-60dB
			1800 ~ 3000kHz	-69dB	1800 ~ 6000kHz	-65dB
			3000 ~ 6000kHz	-71dB	≥6000kHz	-73dB
			≥6000kHz	-77dB		
		Due to Switching transient	400kHz	-19dB	400kHz	-22dB
			600kHz	-21dB	600kHz	-24dB
			1200kHz	-21dB	1200kHz	-24dB
			1800kHz	-24dB	1800kHz	-27dB

* In case of DCS : [A] -> 1710, [B] -> 1785

* In case of PCS : [A] -> 1850, [B] -> 1910

2. PERFORMANCE

No	Item	GSM			DCS & PCS		
7	Intermodulation attenuation		—		Frequency offset	800kHz	
					Intermodulation product should be Less than 55dB below the level of Wanted signal		
8	Transmitter Output Power	Power control	Power	Tolerance	Power control	Power	Tolerance
		Level	(dBm)	(dB)	Level	(dBm)	(dB)
		5	33	±3	0	30	±3
		6	31	±3	1	28	±3
		7	29	±3	2	26	±3
		8	27	±3	3	24	±3
		9	25	±3	4	22	±3
		10	23	±3	5	20	±3
		11	21	±3	6	18	±3
		12	19	±3	7	16	±3
		13	17	±3	8	14	±3
		14	15	±3	9	12	±4
		15	13	±3	10	10	±4
		16	11	±5	11	8	±4
		17	9	±5	12	6	±4
		18	7	±5	13	4	±4
		19	5	±5	14	2	±5
					15	0	±5
9	Burst timing	Mask IN			Mask IN		

2. PERFORMANCE

2) Transmitter - WCDMA Mode

No	Item	Specification
1	Maximum Output Power	Class 3 : +24dBm(+1/-3dB)
2	Frequency Error	±0.1ppm
3	Open Loop Power control in uplink	±9dB@normal, ±12dB@extreme
4	Inner Loop Power control in uplink	Adjust output(TPC command)
		cmd 1dB 2dB 3dB
		+1 +0.5/1.5 +1/3 +1.5/4.5
		0 -0.5/+0.5 -0.5/+0.5 -0.5/+0.5
		-1 -0.5/-1.5 -1/-3 -1.5/-4.5
		Group (10 equal command group)
		+1 +8/+12 +16/+24
5	Minimum Output Power	-50dBm(3.84MHz)
6	Out-of-synchronization handling of output power	Qin/Qout : PCCH quality levels Toff@DPCCH/lor : -22 -> -28dB Ton@DPCCH/lor : -24 -> -18dB
7	Transmit OFF Power	-56dBm(3.84MHz)
8	Transmit ON/OFF Time Mask	±25us PRACH,CPCH,uplink compressed mode
9	Change of TFC	±25us Power varies according to the data rate DTX : DPCH off (minimize interference between UE)
10	Power setting in uplink compressed	±3dB(after 14slots transmission gap)
11	Occupied Bandwidth(OBW)	5MHz(99%)
12	Spectrum emission Mask	-35-15*(Δf-2.5)dBc@ Δf=2.5~3.5MHz,30k -35-1*(Δf-3.5)dBc@ Δf=3.5~7.5MHz,1M -39-10*(Δf-7.5)dBc@ Δf=7.5~8.5MHz,1M -49dBc@ Δf=8.5~12.5MHz,1M

2. PERFORMANCE

No	Item		Specification
13	Adjacent Channel Leakage Ratio(ACLR)		33dB@5MHz, ACP>-50dBm 43dB@10MHz, ACP>-50dBm
14	Spurious Emissions (*: additional requirement)	WCDMA 2100, 800	-36 dBm @f=9~150KHz, 1k BW -36 dBm @f=150KHz~30MHz, 10k -36 dBm @f=30~1000MHz, 100k -30 dBm @f=1~12.75GHz, 1M
		WCDMA 2100	-41 dBm* @1893.5~1919.6MHz, 300k -67 dBm* @925~935MHz, 100k -79 dBm* @935~960MHz, 100k -71 dBm* @1805~1880MHz, 100k
		WCDMA 800	-60 dBm* @869~894MHz, 3.84M -60 dBm* @1930~1990MHz, 3.84M -60 dBm* @2110~2155MHz, 3.84M
15	Transmit Intermodulation		-31 dBc @5MHz, Interferer -40dBc -41 dBc @10MHz, Interferer -40dBc
16	Error Vector Magnitude (EVM)		17.5 % (>-20dBm) (@12.2k, 1DPDCH+1DPCCH)
17	Transmit OFF Power		-15 dB@SF=4, 768kbps, multi-code transmission

3)Receiver - GSM Mode

No	Item		GSM	DCS & PCS
1	Sensitivity (TCH/FS Class II)		-102dBm	-102dBm
2	Co-Channel Rejection (TCH/FS Class II, RBER, TU high/FH)		C/Ic= 7dB	C/Ic= 7dB
3	Adjacent Channel Rejection	200kHz	C/Ia1=-12dB	C/Ia1=-12dB
		400kHz	C/Ia2=-44dB	C/Ia2=-44dB
4	Intermodulation Rejection		Wanted Signal :-98dBm 1st interferer:-44dBm 2nd interferer:-45dBm	Wanted Signal :-96dBm 1st interferer:-44dBm 2nd interferer:-44dBm
5	Blocking Response (TCH/FS Class II, RBER)		Wanted Signal :-101dBm Unwanted : Depend on Frequency	Wanted Signal :-101dBm Unwanted : Depend on Frequency

4) Receiver - WCDMA Mode

No	Item		Specification
1	Reference Sensitivity Level		-106.7dBm(3.84M)
2	Maximum Input Level		-25 dBm(3.84 MHz) -44dBm/3.84MHz(DPCH_Ec) UE@+20dBm output power(Class3)
3	Adjacent Channel Selectivity (ACS)		33dB UE@+20dBm output power(Class3)
4	In-band Blocking		-56dBm/3.84MHz@10MHz UE@+20dBm output power(Class3)
			-44dBm/3.84MHz@15MHz UE@+20dBm output power(Class3)
5	Out-band Blocking		-44 dBm/3.84MHz @f=2050~2095 & 2185~2230 MHz , band a) UE@ =20dBm output power(class3)
			-30 dBm/3.84MHz @f=2025~2050 & 2230~2255 MHz, band a) UE@ +20dBm output power(class3)
			-15 dBm/3.84MHz @f=1~2025 & 2255~12500 MHz, band a) UE@ +20dBm output power(class3)
6	Spurious Response		-44dBm CW UE@ +20dBm output power(class3)
7	Intermodulation Characteristic		-46 dBm CW@10MHz & -46dBm/3.84MHz @20MHz UE@ +20dBm output power(class3)
8	Spurious Emissions	WCDMA 2100, 800	-57 dBm @f=9KHz~1GHz, 100k BW -47 dBm @f=1~12.75GHz, 1M
		WCDMA 2100	-60 dBm @f=1920~1980MHz, 3.84MHz -60 dBm @f=2110~2170MHz, 3.84MHz
		WCDMA 800	-60 dBm @f=824~849MHz, 3.84MHz -60 dBm @f=869~894MHz, 3.84MHz

2. PERFORMANCE

2.4 Current Consumption

	Stand by	Voice Call	VT
WCDMA	400 Hours (2.5mA) (DRX=2.56)	150 Min (350mA) (Tx=10dBm)	90 Min (650mA) (Tx=10dBm)
GSM	300 Hours (3.0mA) (Paging period = 5)	150 Min (350mA) (Tx=Max)	

Stand by and Voice Call Test condition: LCD backlight Off

VT Test condition: Speaker off, LCD backlight off

2.5 Antenna BAR

Antenna Bar	WCDMA	GSM
BAR 3	RSCP >= -105 dBm and Ec/Io >= -12 dBm	RSSI >= -95dBm
BAR 2	(RSCP < -105dBm or Ec/Io < -12dBm) and (Ec/Io >= -14 dBm and RSCP >= -110 dBm)	-100 <= RSSI < -95dBm
BAR 1	(RSCP < -110 dBm or Ec/Io < -14dBm) and (Ec/Io >= -17 dBm and RSCP >= -113 dBm)	-105 <= RSSI < -100dBm
	Network Notification	RSSI < -105dBm

2.6 Battery BAR

Indication	Voltage	
	During Idle state	During Call state
BAR 3 -> 2 (call maintenance over 40min)	$3.75 \pm 0.05V$	$3.64 \pm 0.05V$
BAR 2 -> 1 (call maintenance over 10min)	$3.63 \pm 0.05V$	$3.53 \pm 0.05V$
BAR 1 -> 0 (Icon Blinking)	[Idle & Talk] $3.30V \pm 0.05V$ [Under -10deg] $3.00V \pm 0.05V$	[Idle & Talk] $3.30V \pm 0.05V$ [Under -10deg] $3.00V \pm 0.05V$
Low battery message	BAR 1 -> 0	
Low battery pop-up	BAR 2 -> 1, display one time	
Power OFF during call	-	80s after Low battery message
Power OFF at stand-by	60s after Low battery message	-

2. PERFORMANCE

2.7 Sound Pressure Level

	NO	Test Item		Specification	
A C O U S T I C A I R	1	Sending Loudness Rating (SLR)	M/S	NOM	8±3dB
				MAX	
	2	Sending Frequency Response (SFR)		MAX	MASK IN
	3	Receiving Loudness Rating (RLR)		NOM	-4±3dB
				MAX	-15±3dB
	4	Receiving Frequency Response (RFR)		MAX	MASK IN
	5	Side Tone Masking Rating (STMR)		NOM	17dB ↑
				MAX	
	6	Echo Loss (EL)		NOM	40dB ↑
				MAX	
A C O U S T I C A I R	7	Idle Noise-Sending (INS)	Head set	NOM	-64dBm0p ↓
				MAX	
	8	Idle Noise-Receiving (INR)		NOM	-47dBPA ↓
				MAX	-36dBPA ↓
	9	Sending Loudness Rating (SLR)		NOM	8±3dB
				MAX	
	10	Receiving Loudness Rating (RLR)		NOM	-1±3dB
				MAX	-12±3dB
	11	Side Tone Masking Rating (STMR)		NOM	25dB ↑
				MAX	
A C O U S T I C A I R	12	Echo Loss (EL)	Head set	NOM	40dB ↑
				MAX	
	13	Idle Noise-Sending (INS)		NOM	-55dBm0p ↓
				MAX	
	14	Idle Noise-Receiving (INR)		NOM	-45dBPA ↓
				MAX	-40dBPA ↓

2.8 Charging

- **Charging Method** : CC & CV (Constant Current and Constant Voltage)
- **Maximum Charging Voltage** : 4.2 V
- **Maximum Charging Current** : 600 mA
- **Normal Battery Capacity** : 1000 mAh
- **Charging Time** : Max 160 min (except for trickle charging time)
- **Full charging indication current (charging icon stop current)** : 140 mA
- **Cut-off voltage** : 3.3 V

3. TECHNICAL BRIEF

3.1 General Description

The L704i supports UMTS-800, UMTS-2100, GSM-900, DCS-1800, and PCS-1900 based GSM/GPRS/UMTS. All receivers and the UMTS transmitter use the radioOneZero-IF architecture to eliminate intermediate frequencies, directly converting signals between RF and baseband. The quad-band GSM transmitters use a baseband-to-IF upconversion followed by an offset phase-locked loop that translates the GMSK-modulated or 8-PSK-modulated signal to RF.

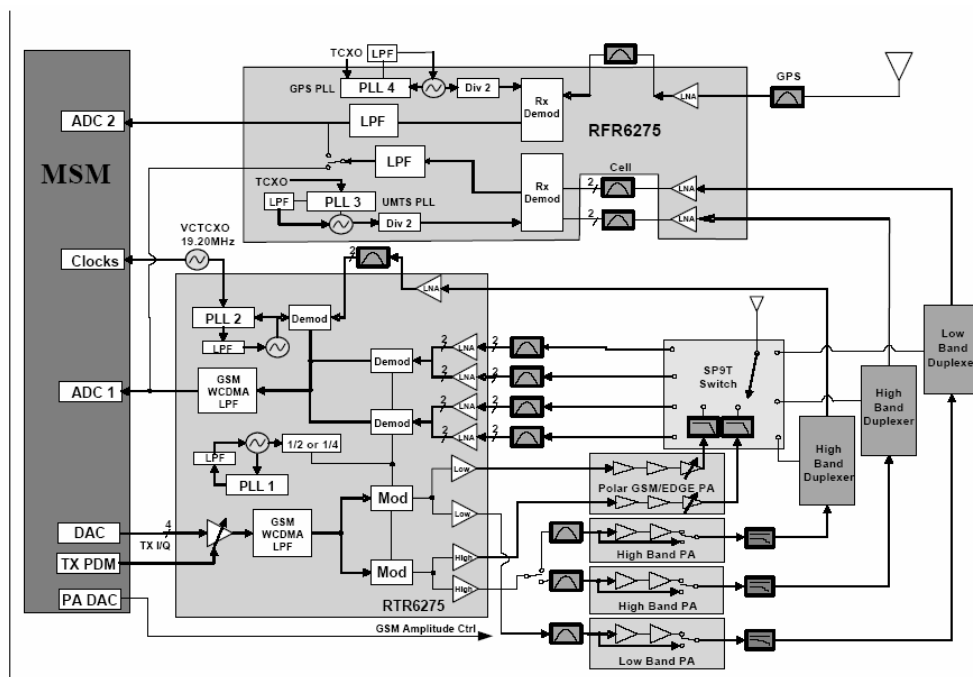


Fig 1.1 Block diagram of RF part

A generic, high-level functional block diagram of L704i is shown in Figure 1-1. One antenna collects base station forward link signals and radiates handset reverse link signals. The antenna connects with receive and transmit paths through a FEM(Front End Module) (plus two duplexers for UMTS high-band and low-band operations).

¹ QUALCOMM's branded chipset that implements a Zero-IF radio architecture.

3. TECHNICAL BRIEF

The UMTS receive paths each include an LNA, an RF band-pass filter, and a downconverter that translate the signal directly from RF-to-baseband using radioOne ZIF techniques. The RFIC's Rx analog baseband outputs, for the receive chains, connect to the MSM IC. The UMTS and GSM Rx baseband outputs share the same inputs to the MSM IC (at ADC1).

For the transmit chains, the RTR6275 IC directly translates the Tx baseband signals (from the MSM device) to an RF signal using an internal LO generated by integrated on-chip PLL and VCO. The RTR6275 IC outputs deliver fairly high-level RF signals that are first filtered by Tx SAWs and then amplified by their respective UMTS PAs. The high- and low-band UMTS RF transmit signals emerge from the RTR6275 transceiver.

In the GSM receive path, the received RF signals are applied through their band-pass filters and down-converted directly to baseband in the RTR6275 transceiver IC. These baseband outputs are shared with the UMTS receiver and routed to the MSM IC for further signal processing. The RTR6275 GSM/UMTS IC receiver baseband outputs share the same interface to the MSM IC input ADC as the RTR6275 IC baseband outputs.

The GSM/EDGE transmit path employs one stage of up-conversion and, in order to improve efficiency, is divided into phase and amplitude components to produce an open-loop Polar topology:

1. The on-chip quadrature up-converter translates the GMSK-modulated signal or 8-PSK modulated signal, to a constant envelope phase signal at RF;
2. The amplitude-modulated (AM) component is applied to the ramping control pin of Polar power amplifier from a DAC within the MSM

L704i power supply voltages are managed and regulated by the PM6650 Power Management IC. This versatile device integrates all wireless handset power management, general housekeeping, and user interface support functions into a single mixed signal IC. It monitors and controls the external power source and coordinates battery recharging while maintaining the handset supply voltages using low dropout, programmable regulators.

The device's general housekeeping functions include an ADC and analog multiplexer circuit for monitoring on-chip voltage sources, charging status, and current flow, as well as userdefined off-chip variables such as temperature, RF output power, and battery ID. Various oscillator, clock, and counter circuits support IC and higher-level handset functions. Key parameters such as under-voltage lockout and crystal oscillator signal presence are monitored to protect against detrimental conditions

3.2 GSM Mode

3.2.1 GSM Receiver

The Dual-mode L704i's receiver functions are split between the three RFICs as follows:

- UMTS-800 operation uses the RFR6275 Receiver ICs to implement the receive signal path, accepting an RF input and delivering analog baseband outputs (I and Q).
- GSM-900, DCS-1800, and PCS-1900 modes both use the RTR6275 IC only. Each mode has independent front-end circuits and down-converters, but they share common baseband circuits (with only one mode active at a time). All receiver control functions are beginning with SBI²-controlled parameters.

RF Front end consists of antenna, front end module (LMSP54MA-543) which includes three RX saw filters(GSM900, DCS and PCS). The front end module allows multiple operating bands and modes to share the same antenna. In L704i, a common antenna connects to one of seven paths: 1) UMTS-800 Rx/Tx, 2) UMTS-2100 Rx/Tx, 3) GSM-900 Rx, 4) DCS-1800 Rx, 5) PCS-1900 Rx , 6) GSM-900 Tx, 7) DCS-1800 PCS-1900 Tx.

UMTS operation requires simultaneous reception and transmission, so the UMTS Rx/Tx connection is routed to a duplexer that separates receive and transmit signals. GSM900, DCS, and PCS operation is time division duplexed, so only the receiver or transmitter is active at any time and a frequency duplexer is not required.

FRONT END MODULE LOGIC

	CTRL1	CTRL2	CTRL3
EGSM TX	HIGH	HIGH	LOW
DCS/PCS TX	HIGH	LOW	LOW
EGSM RX	LOW	LOW	HIGH
DCS RX	LOW	HIGH	HIGH
PCS RX	LOW	HIGH	LOW
UMTS 1	HIGH	LOW	HIGH
UMTS 2	HIGH	HIGH	HIGH

Table 1.1 Front End Module Control logic

² The RFIC operating modes and circuit parameters are MSM-controlled through the proprietary 3-line Serial Bus Interface (SBI). The Application Programming Interface (API) is used to implement SBI commands. The API is documented in AMSS Software - please see applicable AMSS Software documentation for details.

3. TECHNICAL BRIEF

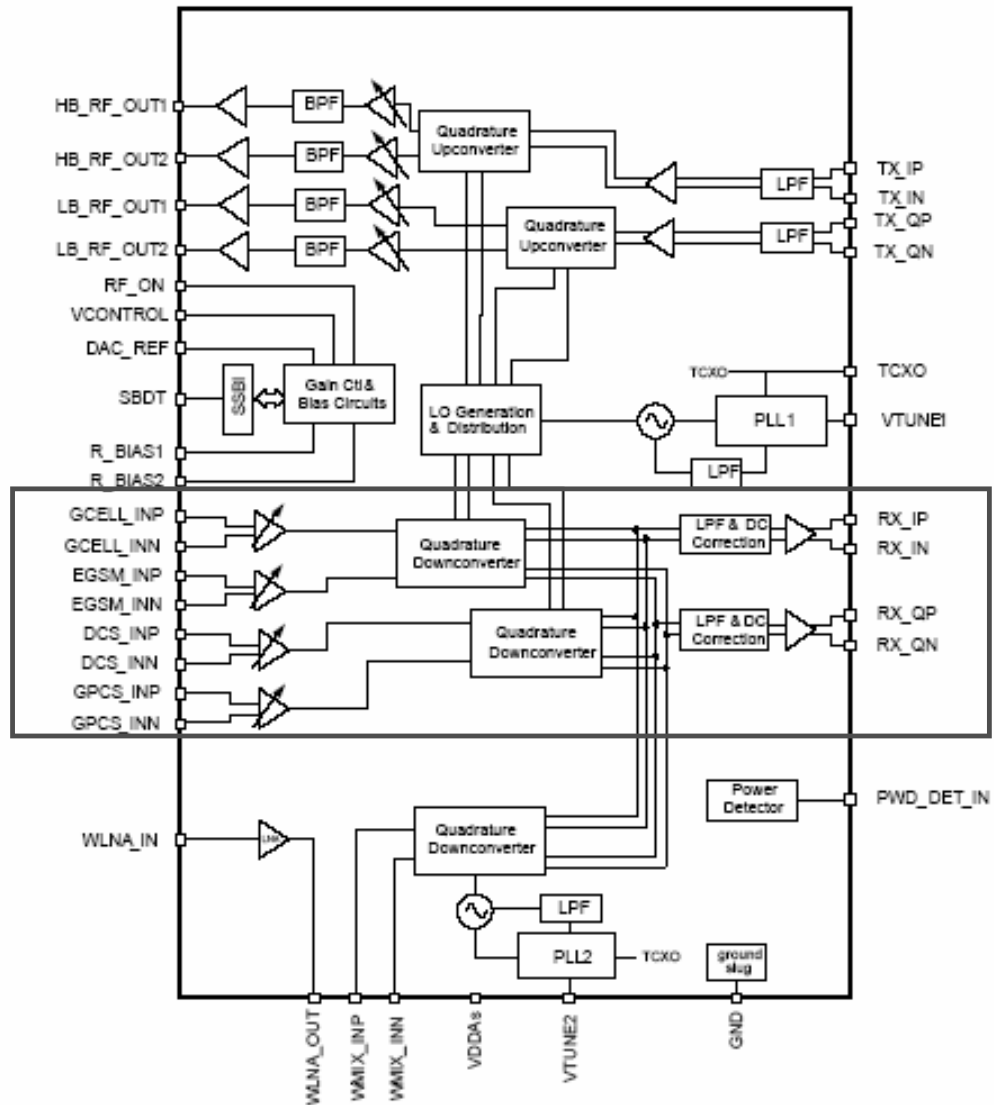
The GSM900, DCS, and PCS receiver inputs of RTR6275 are connected directly to the transceiver front-end circuits(filters and front end module). GSM900, DCS, and PCS receiver inputs are similar to the RFR6275 UMTS Rx input in that they also use differential configurations to improve common-mode rejection and second-order non-linearity performance. The balance between the complementary signals is critical and must be maintained from the RF filter outputs all the way into the IC pins.

Since GSM900, DCS, and PCS signals are time-division duplex (the handset can only receive or transmit at one time), switches are used to separate Rx and Tx signals in place of frequency duplexers - this is accomplished in the front end module.

The GSM900, DCS, and PCS receive signals are routed to the RTR6275 through band selection filters and matching networks that transform single-ended 50 Ω sources to differential impedances optimized for gain and noise figure. Similar to the RFR, the RTR input uses a differential configuration to improve second-order inter-modulation and common mode rejection performance. The RTR6275 input stages include MSM-controlled gain adjustments that maximize receiver dynamic range.

The amplifier outputs drive the RF ports of the quadrature RF-to-baseband downconverters. The downconverted baseband outputs are multiplexed and routed to lowpass filters (one I and one Q) having passband and stopband characteristics suitable for GMSK or 8-PSK processing. These filter circuits include DC offset corrections. The filter outputs are buffered and passed on to the MSM6280 IC for further processing (an interface shared with the RFR6275 UMTS receiver outputs

3. TECHNICAL BRIEF



RTR6275 RX feature

3. TECHNICAL BRIEF

3.2.2 GSM Transmitter output

The RTR6275 transmitter outputs(DA_HB2_OUT and DA_LB1_OUT)include on-chip output matching inductors. 50ohm output impedance is achieved by adding a series capacitor at the output pins. The capacitor value may be optimized for specific applications and PCB characteristics based on pass-band symmetry about the band center frequency, the suggested starting value is shown in Figure1.2.

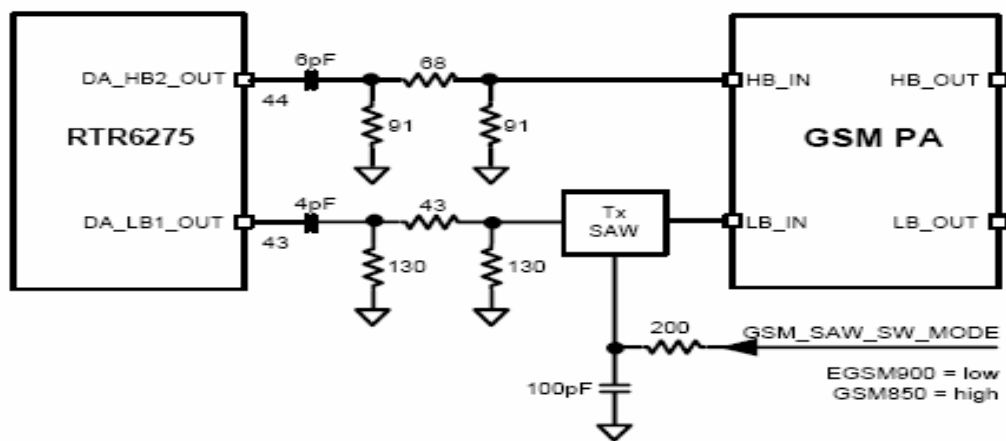


Figure 1.2.2-1 GMS Transmitter matching

The RTR6275 IC is able to support GSM 850/1900 and GSM 1800/1900 mode transmitting. This design guideline shows a quad-band GSM application.

Both high-band and low band outputs are followed by resistive pads to ensure that the load Presented to the outputs remains close to 50ohm. The low-band GSM. Tx path also includes a Tx-band SAW filter to remove noise-spurious components and noise that would be amplified by the PA and appear in the GSM Rx band

3.3 UMTS Mode

3.3.1 Receiver

The UMTS duplexer receiver output is routed to LNA circuits within the RFR6275 device. UMTS LNA circuits (one for low-band UMTS and one for high-band UMTS path) separated from all other receive functions contained within the RFR6275 receiver IC to improve mixer LO to RF isolation- a critical parameter in the ZIF architecture. Isolation is further improved using high-reverse isolation circuits in the LNA designs. The LNA gains are stepped via API control. The IC operating mode and LNA bias currents are automatically adjusted via software to minimize DC power consumption.

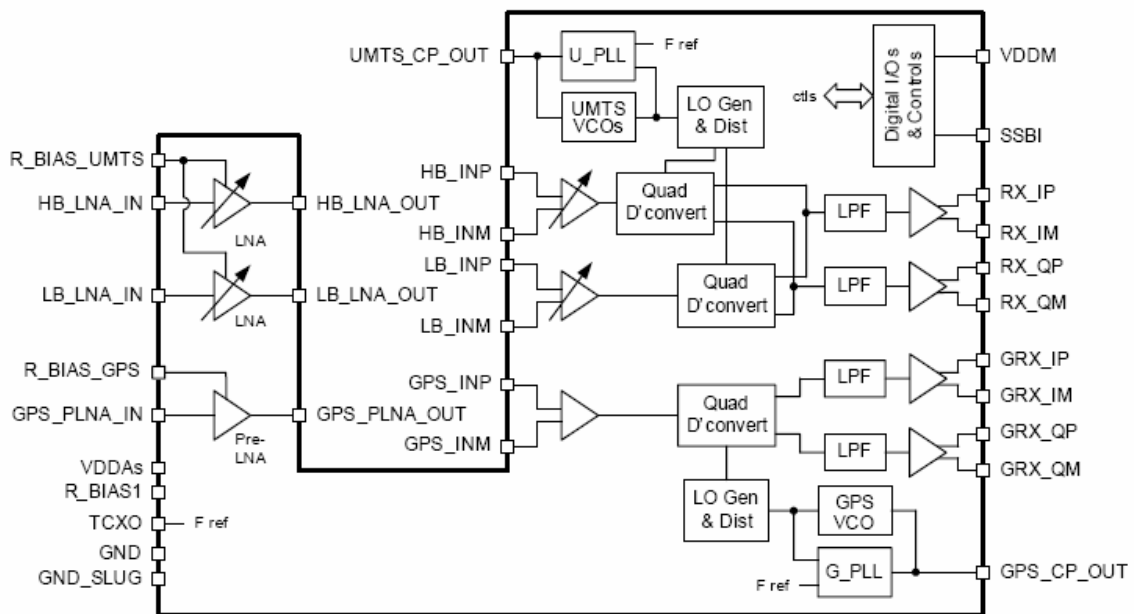


Figure 1.3.1-1 RFR6275 IC functional block diagram

3. TECHNICAL BRIEF

Separate GPS and UMTS down-converters exist within the RFR6275 to allow GPS signals to be processed independently of UMTS signals. The inputs use differential configurations to improve second-order intermodulation and common-mode rejection performance. The differential input gain stage implements MSM IC-controlled gain adjustments to extend receiver dynamic range. The outputs of the differential amplifiers drive the RF port of the quadrature RF-to-baseband down-converters. The down-converters are routed to low-pass filters (one I and one Q) whose pass-band and stop-band characteristics supplement MSM device processing. These filter circuits allow for DC offset correction and the differential I/Q outputs are buffered to interface with the MSM IC.

Numerous secondary functions also are integrated on-chip: the Rx LO generation and distribution circuits and various interface, control, and status circuits. An on-chip UMTS VCO is phase locked to the external VC-TCXO signal and processed, by the LO generation and distribution circuits, to create the UMTS Rx LO signals for the quadrature down-converter. A second on-chip GPS VCO is also phase-locked to the VC-TCXO signal to generate the LO signals for the GPS down-converter. The LO signals, applied to their respective mixer, are at frequencies different to that of the VCOs, which is an important consideration for ZIF processing. The QUALCOMM MSM device provides status and control signaling, employing power reduction features (such as selective circuit power-down, gain control, and bias control) to extend handset standby time.

3.3.2 Transmitter

The UMTS Tx path begins with differential baseband signals (I and Q) from the MSM device. These analog input signals are amplified, filtered, and applied to the quadrature up-converter mixers. The up-converter output is amplified by multiple variable gain stages that provide transmit AGC control. The AGC output is filtered and applied to the driver amplifier; this output stage includes an integrated matching inductor that simplifies the external matching network to a single series capacitor to achieve the desired 50- Ω interface.

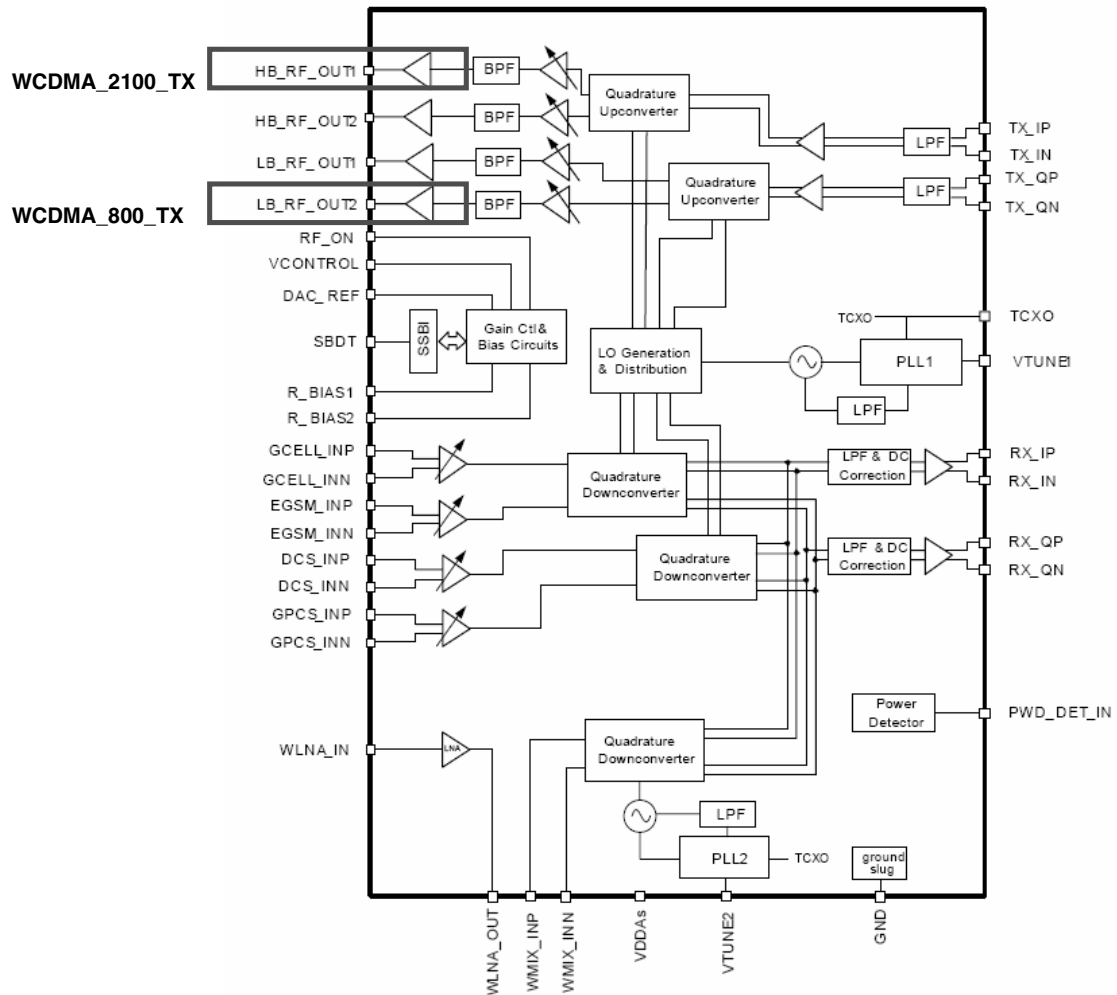
The RTR6275 UMTS output is routed to its power amplifier through a bandpass filter, and delivers fairly high-level signals that are filtered and applied to the PA. Transmit power is delivered from the duplexer to the antenna through the switch module.

The transceiver LO synthesizer is contained within the RTR6275 IC with the exception of the off-chip loop filter components and the VC-TCXO. This provides a simplified design for multimode applications. The PLL circuits include a reference divider, phase detector, charge pump, feedback divider, and digital logic generator.

UMTS Tx. Using only PLL1, the LO generation and distribution circuits create the necessary LO signals for nine different frequency converters. the UMTS transmitter also employs the ZIF architecture to translate the signal directly from baseband to RF. This requires F_{LO} to equal F_{RF} , and the RTR6275 IC design achieves this without allowing F_{VCO} to equal F_{RF} .

3. TECHNICAL BRIEF

The RTR6275 IC is able to support UMTS 2100/1900 and UMTS 800 mode transmitting. This design guideline shows only UMTS 2100/1900 and UMTS 850 applications.



RTR6275 IC functional block diagram

3. TECHNICAL BRIEF

3.4 LO Phase-locked Loop

All LO functions are fully integrated on-chip and do not require user any adjustment. QUALCOMM has established and implemented frequency plans and LO generation schemes that support the radioOne Platform B-series chipset. Only one area requires handset designer attention: the loop filters relating to each PLL. These are addressed in this chapter.

All the UMTS Rx, GSM Rx, and GPS PLL circuits are included within the RFICs: reference dividers, phase detectors, charge pumps, feedback dividers, and digital logic.

There are four integrated VCOs and PLLs within the Platform B (RFCMOS) chipset as shown in Figure 5-1 and Figure 5-2:

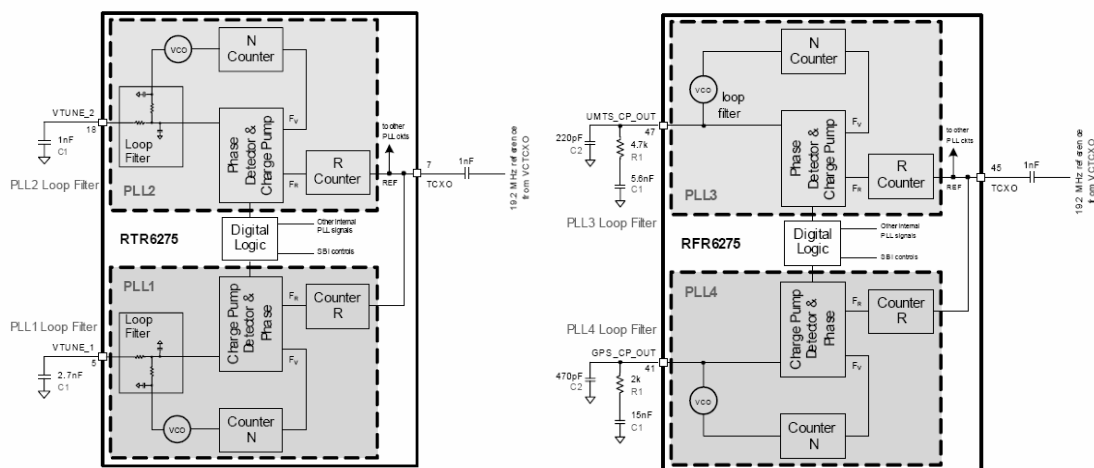
■ Figure 5-1

1. PLL1, within the RTR6275 IC, produces the LO for up- and down-conversion of GSM Tx/Rx, and UMTS Tx.
2. PLL2, within RTR6275 IC, produces the Rx LO for one of the (high band) UMTS receive Paths.

■ Figure 5-2

3. PLL3, within the RFR6275 IC, produces the Rx LO for the remaining UMTS receive paths.
4. PLL4, within the RFR6275 IC, produces the Rx LO for the GPS receive path.

Within the RFICs, a buffered 19.2 MHz TCXO signal provides the synthesizer input (REF), the frequency reference to which the PLL is phase- and frequency-locked. The reference is divided by the R-Counters to create a fixed frequency input to the phase detector, FR. The other phase detector input (FV) varies as the loop acquires lock, and is generated by dividing the VCO frequency using the feedback path N-Counter. The closed loop will force FV to equal FR when locked. If the loop is not locked, the error between FV and FR will create an error signal at the output of the charge pump. This error signal is filtered by the loop filter components and applied to the VCO, tuning the output frequency so that the error is decreased. Ultimately, the loop forces the error to approach zero and the PLL is phase- and frequency-locked.



RFR6275 PLLs functional block diagram

3.4.1 UMTS Rx PLL (PLL3)

QUALCOMM provides a baseline PLL3 design for UMTS Rx. Loop filter component reference designators are shown in Figure 5-2.

Table_ Baseline PLL3 design for UMTS Rx

Band/mode	Loop parameters				Settling time (μs)	Filter component values			
	Kvco (MHz/V)	CP_I (mA)	PM (deg)	L_BW (kHz)		C1 (nF)	R1 (kΩ)	C2 (pF)	
UMTS 850 Rx	On-chip	3.68	58.9	35	250	5.6	4.7	220	
UMTS 1900 Rx	On-chip	3.13	60.1	35	250	5.6	4.7	220	

- Notes: 1. The performance values listed in this table are based on simulation results and are provided as a starting point for handset designers. Synthesizer performance is still being evaluated and optimized during this document release. Loop parameter, settling time, and filter component values are all expected to change when the optimization effort is completed. Future revisions will include expected performance based on measured data.
2. For L704i C1_2.2nF C2_150pF R1_10k
3. Loop parameter acronyms are: Kvco VCO tuning sensitivity CP_I Charge pump current (controlled by API software) PM Phase margin L_BW Loop bandwidth
4. The listed VCO tuning sensitivity is based on QUALCOMM internal Rx VCO.
5. The listed settling times are for switching between channels at opposite ends of the active band and settling to within 250 Hz of the final frequency.
6. Test and evaluation efforts were ongoing at the time of this document release. Check future versions for design recommendations based on our test results.

3.4.2 Transceiver PLL (PLL1)

The PLL1 within the RTR6275 IC creates the Rx LO for all the GSM receive bands and GSM transmit bands as well as the UMTS transmit bands. The PLL1 of RTR6275 IC (with on-chip VCO) creates the transceiver LO that supports the quad-band GSM receivers and the GSM transmitters as well as the triband UMTS transmit outputs. All LO functional blocks are integrated into the RTR6275 IC except for some loop filter capacitors (Figure 5-1). On-chip circuits include reference divider, phase detector, charge pump, VCO, feedback divider, and digital logic status. The off-chip loop filter capacitors allow minimal optimization of PLL performance characteristics (stability, transitory response, settling time, and phase noise) for different applications.

3. TECHNICAL BRIEF

3.5 Off-chip RF Components

3.5.1 Front end module (FL34 : LMSP54MA-543)

TERMINAL CONFIGURATION

Terminal No.	Terminal Name	Terminal No.	Terminal Name
(1)	GND	(14)	Vc1
(2)	GND	(15)	Vc2
(3)	GSM1800/1900Tx	(16)	Vc3
(4)	GND	(17)	GND
(5)	GND	(18)	GND
(6)	GSM900Tx	(19)	GSM900 Rx
(7)	UMTS 2	(20)	GSM900 Rx
(8)	GND	(21)	GSM1800 Rx
(9)	UMTS 1	(22)	GSM1800 Rx
(10)	GND	(23)	GSM1900 Rx
(11)	ANT	(24)	GSM1900 Rx
(12)	GND	(25)	Pin Direction
(13)	Vdd	(26)	Pin Direction

If you needs UMTS single port only, the other UMTS port should be NC(No connection to any circuit).

CONTROL LOGIC

Mode	Vc1	Vc2	Vc3	Vdd
GSM900 Tx	H	H	L	H
GSM1800/GSM1900 Tx	H	L	L	H
GSM900 Rx	L	L	H	H
GSM1800 Rx	L	H	H	H
GSM1900 Rx	L	H	L	H
UMTS 1	H	L	H	H
UMTS 2	H	H	H	H

Voltage range of Vc1, Vc2, Vc3

H: 1.5-3.0V

L: 0.0-0.2V

Voltage range of Vdd

2.5-3.0V

3.5.2 UMTS duplexer

(FL35_UMTS2100: SAYZY1G95EA0B00, FL18_UMTS800 : EFSD835MF2S2) A UMTS duplexer splits a single operating band into receive and transmit paths. Important performance requirements include;

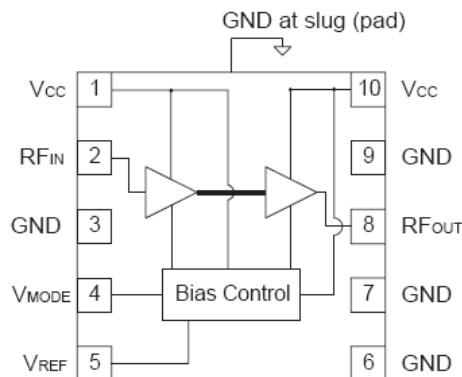
- Insertion loss . this component is also in the receive and transmit paths ; In the L704i typical losses : UMTS2100_ Tx = 1.45 dB, UMTS2100_ Rx = 1.86 dB and UMTS800_ Tx = 0.83 dB, UMTS800_ Rx = 1.23 dB
- Out-of-band rejection or attenuation . the duplexer provides input selectivity for the receiver, output filtering for the transmitter, and isolation between the two. Rejection levels for both paths are specified over a number of frequency ranges. Two Tx-to-Rx isolation levels are critical to receiver performance:
- Rx-band isolation . the transmitter is specified for out-of-band noise falling into the Rx band. This noise leaks from the transmit path into the receive path, and must be limited to avoid degrading receiver sensitivity. The required Rx-band isolation depends on the PA out of-band noise levels and Rx-band losses between the PA and LNA. Minimum duplexer Rx band isolation value is about 46 dB.
- Tx-band isolation . the transmit channel power also leaks into the receiver. In this case, the leakage is outside the receiver passband but at a relatively high level. It combines with Rx band jammers to create cross-modulation products that fall in-band to desensitize the receiver. The required Tx-band isolation depends on the PA channel power and Tx-band losses between the PA and LNA. Minimum duplexer Tx-band isolation value is about 55 dB.
- Passband ripple . the loss of this fairly narrowband device is not flat across its passband. Passband ripple increases the receive or transmit insertion loss at specific frequencies, creating performance variations across the band.s channels, and should be controlled.
- Return loss . minimize mismatch losses with typical return losses of 10 dB or more (VSWR <2:1).
- Power handling . high power levels in the transmit path must be accommodated without degraded performance. The specified level depends on the operating band class and mobile station class (per the applicable standard), as well as circuit losses and antenna EIRP. Several duplexer characteristics depend upon its source and load impedances. QUALCOMM strongly recommends an isolator be used between the UMTS PA and duplexer to assure proper performance.

3. TECHNICAL BRIEF

3.5.3 UMTS Power Amplifier

(U578_UMTS2100: AWT6277R, U574_UMTS800 : AWT6307R) The AWT6277 meets the increasing demands for higher output power in UMTS handsets. The PA module is optimized for $V_{REF} = +2.85$ V, a requirement for compatibility with the Qualcomm® 6250 chipset. The device is manufactured on an advanced InGaP HBT MMIC technology offering state-of-the-art reliability, temperature stability, and ruggedness.

Selectable bias modes that optimize efficiency for different output power levels, and a shutdown mode with low leakage current, increase handset talk and standby time. The selfcontained 4 mm x 4 mm x 1.1 mm surface mount package incorporates matching networks optimized for output power, efficiency, and linearity in a 50 W system.



3. TECHNICAL BRIEF

(T_C = +25 °C, V_{CC} = +3.4 V, V_{REF} = +2.85 V, 50 Ω system)

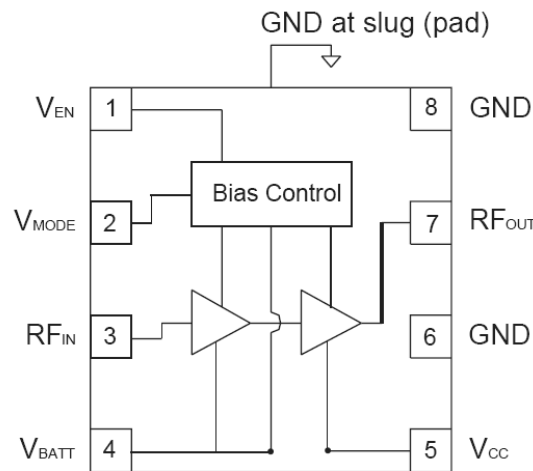
PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Gain	24.5 13.5 12	26.0 15.5 14	28 17.5 16	dB	P _{OUT} = +28.5 dBm, V _{MODE} = 0 V P _{OUT} = +16 dBm, V _{MODE} = +2.85 V P _{OUT} = +7 dBm, V _{CC} = 1.5 V, V _{MODE} = +2.85 V
ACLR1 at 5 MHz offset ⁽¹⁾	- - -	-40 -43 -40	-38 -38 -38	dBc	P _{OUT} = +28.5 dBm, V _{MODE} = 0 V P _{OUT} = +16 dBm, V _{MODE} = +2.85 V P _{OUT} = +7 dBm, V _{CC} = 1.5 V, V _{MODE} = +2.85 V
ACLR2 at 10 MHz offset	- - -	-56 -52 -57	-48 -48 -48	dBc	P _{OUT} = +28.5 dBm, V _{MODE} = 0 V P _{OUT} = +16 dBm, V _{MODE} = +2.85 V P _{OUT} = +7 dBm, V _{CC} = 1.5 V, V _{MODE} = +2.85 V
Power-Added Efficiency ⁽¹⁾	39 18 12	43 21 15	- - -	%	P _{OUT} = +28.5 dBm, V _{MODE} = 0 V P _{OUT} = +16 dBm, V _{MODE} = +2.85 V P _{OUT} = +7 dBm, V _{CC} = 1.5 V, V _{MODE} = +2.85 V
Quiescent Current (I _q)	-	16	22	mA	V _{MODE} = +2.85 V, V _{CC} = 3.4 V
Reference Current	-	3.6	5	mA	through V _{REF} pin
Mode Control Current	-	0.3	1	mA	through V _{MODE} pin, V _{MODE} = +2.85 V
Leakage Current	-	<1	5	μA	V _{CC} = +4.2 V, V _{REF} = 0 V, V _{MODE} = 0 V
Noise in Receive Band	-	-141	-138	dBm/Hz	2110 MHz to 2170 MHz
Harmonics 2fo 3fo, 4fo	- - -	-45 -50 -50	-40 -45 -45	dBc	P _{OUT} ≤ +28.5 dBm
Input Impedance	-	-	2:1	VSWR	
Spurious Output Level (all spurious outputs)	-	-	-70	dBc	P _{OUT} ≤ +28.5 dBm In-band load VSWR < 5:1 Out-of-band load VSWR < 10:1 Applies over all operating conditions
Load mismatch stress with no permanent degradation or failure	10:1	-	-	VSWR	Applies over full operating range

3. TECHNICAL BRIEF

The AWT6307R meets the increasing demands for higher efficiency and smaller footprint in CDMA 1X handsets. The package pinout was chosen to enable handset manufacturers to switch from a 4 mm x 4 mm PA module with few layout changes while reducing board area requirements by 44 %. The AWT6307R uses ANADIGICS' exclusive InGaPPlus™ technology, which combines HBT and pHEMT devices on the same die, to enable state-of-the-art reliability, temperature stability, and ruggedness.

The AWT6307R is part of ANADIGICS' High-Efficiency-at-Low-Power (HELP™) family of CDMA power amplifiers, which deliver low quiescent currents and significantly greater efficiency without a costly external DAC or DC-DC converter.

Through selectable bias modes, the AWT6307 achieves optimal efficiency across different output power levels, specifically at low- and mid-range power levels where the PA typically operates, thereby dramatically increasing handset talk-time and standby-time. Its built-in voltage regulator eliminates the need for external voltage regulation components. The 3 mm x 3 mm x 1 mm surface mount package incorporates matching networks optimized for output power, efficiency and linearity in a 50 Ω system.



3. TECHNICAL BRIEF

(T_G = +25 °C, V_{BATT} = V_{CC} = +3.4 V, V_{EN} = +2.4 V, 50 Ω system)

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Gain	25 15 16	27 17 17.5	30 19 20	dB	P _{OUT} = +28 dBm, V _{MODE} = 0 V P _{OUT} = +16 dBm, V _{MODE} = +2.4 V P _{OUT} = +17 dBm, V _{MODE} = +2.4 V, V _{CC} = +3.7 V
Adjacent Channel Power at ±885 kHz offset ⁽¹⁾ Primary Channel BW = 1.23 MHz Adjacent Channel BW = 30 kHz	- - -	-50 -57 -55	-47 -47 -47	dBc	P _{OUT} = +28 dBm, V _{MODE} = 0 V P _{OUT} = +16 dBm, V _{MODE} = +2.4 V P _{OUT} = +17 dBm, V _{MODE} = +2.4 V, V _{CC} = +3.7 V
Adjacent Channel Power at ±1.98 MHz offset ⁽¹⁾ Primary Channel BW = 1.23 MHz Adjacent Channel BW = 30 kHz	- -	-63 -61	-57 -57	dBc	P _{OUT} = +28 dBm, V _{MODE} = 0 V P _{OUT} = +16 dBm, V _{MODE} = +2.4 V
Power-Added Efficiency ⁽¹⁾	37 17	40 21	- -	%	P _{OUT} = +28 dBm, V _{MODE} = 0 V P _{OUT} = +16 dBm, V _{MODE} = +2.4 V
Quiescent Current (I _q)	-	14	20	mA	V _{MODE} = +2.4 V, Low Bias
Enable Current	-	0.4	0.8	mA	through V _{EN} pin, V _{MODE} = +2.4 V
Battery Current	-	2.5	5	mA	through V _{BATT} pin, V _{MODE} = +2.4 V
Mode Control Current	-	0.5	0.8	mA	through V _{MODE} pin, V _{MODE} = +2.4 V
Leakage Current	-	<1	5	μA	V _{CC} = +4.2 V, V _{EN} = 0 V, V _{MODE} = 0 V
Noise in Receive Band	-	-133	-131	dBm/Hz	869 MHz to 894 MHz
Harmonics 2fo 3fo, 4fo	- -	-42 -50	-30 -30	dBc	
Input Impedance	-	-	2:1	VSWR	
Spurious Output Level (all spurious outputs)	-	-	-65	dBc	P _{OUT} ≤ +28 dBm In-band Load VSWR < 5:1 Out-of-band Load VSWR < 10:1 Applies over all operating conditions
Load mismatch stress with no permanent degradation or failure	8:1	-	-	VSWR	Applies over all operating conditions

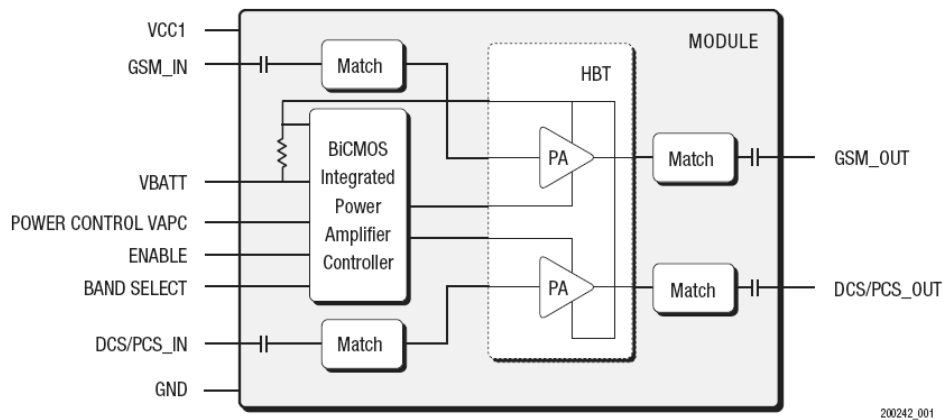
3.5.4 GSM/GPRS Power amplifier (U569 :SMPY0008301)

The SKY77318 Power Amplifier Module (PAM) is designed in a low profile (1.2 mm), compact form factor for quad-band cellular handsets comprising GSM850/900, DCS1800, and PCS1900 operation.

The PAM also supports Class 12 General Packet Radio Service (GPRS) multi-slot operation. The module consists of separate GSM PA and DCS1800/PCS1900 PA blocks, impedancematching circuitry for 50 Ω input and output impedances and a Power Amplifier Control (PAC) block with an internal current-sense resistor. The custom BiCMOS integrated circuit provides the internal PAC function and interface circuitry. Fabricated onto a single Gallium Arsenide (GaAs) die, one Heterojunction Bipolar Transistor (HBT) PA block supports the GSM bands and the other supports the DCS1800 and PCS1900 bands. Both PA blocks share common power supply pins to distribute current. The GaAs die, the Silicon (Si) die, and the passive components are mounted on a multi-layer laminate substrate. The assembly is encapsulated with plastic overmold.

3. TECHNICAL BRIEF

RF input and output ports of the SKY77318 are internally matched to a 50 Ω load to reduce the number of external components for a quad-band design. Extremely low leakage current (2.5 μ A, typical) of the dual PA module maximizes handset standby time. The SKY77318 also contains bandselect switching circuitry to select GSM (logic 0) or DCS/PCS (logic 1) as determined from the Band Select (BS) signal. In Figure below, the BS pin selects the PA output (DCS/PCS_OUT or GSM_OUT) and the Analog Power Control (VAPC) controls the level of output power.



General						
Parameter	Symbol	Test Condition	Minimum	Typical	Maximum	Units
Supply voltage	VCC	—	2.9	3.5	4.8	V
Power control impedance	ZAPC	—	—	200	—	k Ω
ENABLE control voltage	VPE	—	-0.1	—	0.6	V
	VPE	—	1.2	—	VCC	V
ENABLE current	IPE	VPE \leq 3.0 V	—	—	30	μ A
Band Select control voltage	VBS	—	-0.1	—	0.6	V
	VBS	—	1.2	—	VCC	V
Band Select current	IBS	VBS \leq 3.0 V	—	—	30	μ A
Standby Mode Leakage current	I _Q	VCC \leq 4.5 V VAPC = 0.1 V ENABLE \leq 0.2 V T _{case} = +25 $^{\circ}$ C P _{IN} \leq -60 dBm	—	2.5	10	μ A
VAPC Input Filter Bandwidth	VAPC_FBW	—	85	120	150	kHz
VAPC Threshold	VAPC_THCL	—	100	150	200	mV

3.5.5 UMTS Rx RF filter (FL105, FL106)

FL33 - EFCH881MTDA 869 ~ 894MHz FL25 - SAFEB2G14FA0F0 2110 ~ 2170MHz An RF filter is located between the UMTS LNA and mixer. Insertion loss is important, but not as critical as losses before the LNA. The most important parameters of this component include:

- Out-of-band rejection or attenuation levels, usually specified to meet these conditions:
 - ☐ Far out-of-band signals - ranging from DC up to the first band of particular concern and from the last band of particular concern to beyond three times the highest passband frequency.
 - ☐ Tx-band leakage - the transmitter channel power, although attenuated by the duplexer, still presents a cross-modulation threat in combination with Rx-band jammers. The RF filter must provide rejection of this Tx-band leakage.
 - ☐ Other frequencies of particular concern . bands known to include other wireless transmitters that may deliver significant power levels to the receiver input.
- Phase and amplitude balance - the ZIF architecture requires well-balanced differential inputs to the RFR6275 IC. This is accomplished by the RF filter which takes a single-ended output from the RFR6275 IC and provides differential outputs having nominal 180° phase separation. Phase and/or amplitude imbalance causes degraded common-mode rejection and second-order nonlinearity, so their requirements are specified jointly.
 - ☐ ± 3 degrees and ± 1 dB
 - ☐ -12 to + 3 degrees and ± 0.7 dB

3.5.6 VCTCXO (X4 : TG-5010LH-19.2MHz)

The Voltage Controlled Temperature Compensated Crystal Oscillator (VCTCXO) provides the reference frequency for all RFIC synthesizers as well as clock generation functions within the MSM6280 IC. The oscillator frequency is controlled by the MSM6280's TRK_LO_ADJ pulse density modulated signal in the same manner as the transmit gain control.

The filtered PDM signal results in an analog control signal into the VCTCXO tuning port whose voltage is directly proportional to the density of the digital bit stream. The MSM device varies the pulse density to change the analog control voltage that sets the oscillator frequency - all within a feedback control loop that minimizes handset frequency drift relative to the network.

3. BB Technical Description

3.6 Digital Baseband(DBB/MSM6280)

3.6.1 General Description

A. Features(MSM6280)

- Support for multimode operation - HSDPA, tri-band WCDMA (UMTS), quad GSM/GPRS
- Support for HSDPA downlink up to 3.6Mbps (initial commercial release will support 3.6Mbps
- HSDPA. Later releases will have support for 7.2 Mbps HSDPA)
- Support for WCDMA (UMTS) uplink data rate up to 384 kbps
- High-performance ARM926EJ-S running at up to 225 MHz (later at 270 MHz for 7.2 Mbps HSDPA)
- ARM Jazelle Java hardware acceleration for faster Java-based games and other applets
- QDSP4000 high-performance DSP cores
- Integrated gpsOne position location technology functionality
- Integrated Bluetooth 1.2 baseband processor for wireless connectivity to peripherals
- Qcamera™ with 15 fps QVGA viewfinder resolution, and support for 4 MP camera sensors
- Direct interface to digital camera module with video front end (VFE) image processing
- True 3D graphics for advanced wireless gaming
- SecureMSM v2.0 includes support for Open Mobile Alliance (OMA) DRM v2.0, SIM-lock and IMEI integrity. Support for Q-fuse.
- Audio on par with portable music players
- Vocoder support (AMR, FR, EFR, HR)
- Advanced 14 x 14 mm, 0.5 mm pitch, 409-pin lead-free CSP packaging technology
- SD/SDIO hardware support

3. TECHNICAL BRIEF

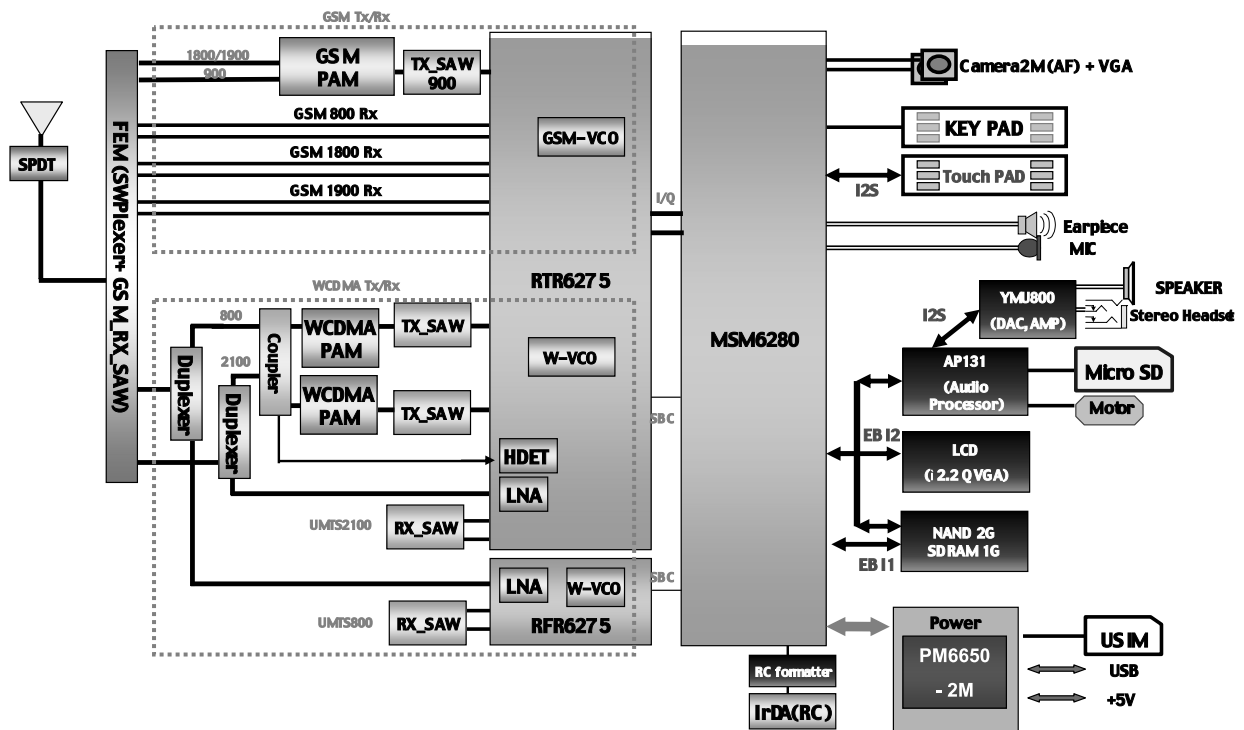


Figure. Simplified Block Diagram

3. TECHNICAL BRIEF

3.7 Block Diagram(MSM6280)

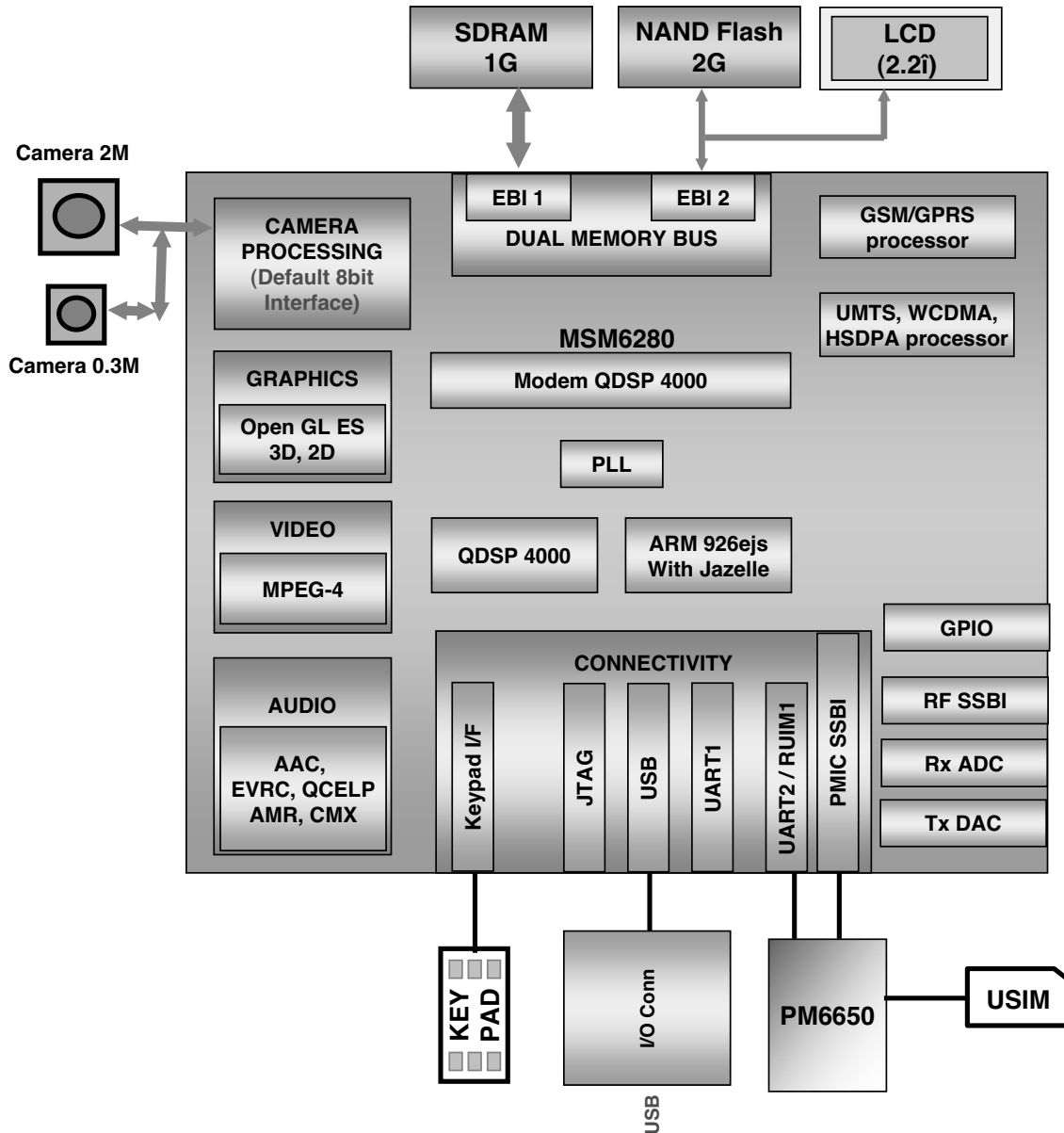


Figure. Simplified Block Diagram of MSM6280

3.8. Subsystem(MSM6280)

3.8.1. ARM Microprocessor Subsystem

The MSM6280 device uses an embedded ARM926EJ-S microprocessor. This microprocessor, through the system software, controls most of the functionality for the MSM, including control of the external peripherals such as the keypad, LCD, SDRAM, and NAND-Flash devices. Through a QUALCOMM proprietary serial bus interface (SBI) the ARM926EJ-S configures and controls the functionality of the RTR6275, RFR6275 and PM6650 devices.

3.8.2. WCDMA R99 features

The MSM6280 device supports release 99 June 2004 of the W-CDMA FDD standard, including the following features:

- All modes and data rates for W-CDMA frequency division duplex (FDD), with the following restrictions:
 - The downlink supports the following specifications:
 - Up to four physical channels, including the broadcast channel (BCH), if present
 - Up to three dedicated physical channels (DPCHs)
 - Spreading factor (SF) range support from 4 to 256
 - The following transmit diversity modes are supported:
 - Space time transmit diversity (STTD)
 - Time-switched transmit diversity (TSTD)
 - Closed-loop feedback transmit diversity (CLTD)
 - The uplink supports the following specifications:
 - The uplink provides the following UE support:
 - One physical channel, eight TrCH, and 16 TrBks starting at any frame boundary
 - A maximum data rate of 384 kbps
 - Full SF range support from 4 to 256
- SMS (CS and PS)
- PS data rate - 384 kbps DL / 384 kbps UL
- CS data rate - 64 kbps DL / 64 kbps UL
- AMR (all rates)

3. TECHNICAL BRIEF

3.8.3. GSM features

The following GSM modes and data rates are supported by the MSM6280 device hardware. Support modes conform to release '99 specifications of the sub-feature.

■ Voice features

- ☐ FR
- ☐ EFR
- ☐ AMR
- ☐ HR
- ☐ A5/1, A5/2, and A5/3 ciphering

■ Circuit-switched data features

- ☐ 9.6k
- ☐ 14.4k
- ☐ Fax
- ☐ Transparent and non-transparent modes for CS data and fax
- ☐ No sub-rates are supported.

3.8.4. GPRS features

■ Packet switched data (GPRS)

- ☐ DTM (Simple Class A) operation
- ☐ Multi-slot class 12 data services
- ☐ CS schemes: CS1, CS2, CS3, and CS4
- ☐ GEA1, GEA2, and GEA3 ciphering

■ Maximum of four Rx timeslots per frame

3.8.5. MSM6280 device audio processing features

■ Integrated wideband stereo CODEC

- ☐ 16-bit DAC with typical 88 dB dynamic range
- ☐ Supports sampling rates up to 48 kHz on the speaker path and 16 kHz on the microphone path

■ VR- Voice mail + voice memo

■ Acoustic echo cancellation

■ Audio AGC

■ Audio Codecs: AMR-NB, AAC, AAC Plus, Enhanced AAC Plus, Windows Audio v9, Real Audio 8 (G2)

■ Internal vocoder supporting AMR, FR, EFR, and HR

3.8.6. MSM6280 microprocessor subsystem

- Industry standard ARM926EJ-S embedded microprocessor subsystem

- ☐ 16 kB instruction and 16 kB data cache
- ☐ Instruction set compatible with ARM7TDMI®
- ☐ ARM version 5TEJ instructions
- ☐ Higher performance 5 stage pipeline, Harvard cached architecture
- ☐ Higher internal CPU clock rate with on-chip cache

- Java hardware acceleration

- Enhanced memory support

Please note that NOR/PSRAM will not be supported on MSM6280.

- ☐ 75 MHz and 90 MHz bus clock for SDRAM
- ☐ 32-bit SDRAM
- ☐ Dual memory buses separating the high-speed memory subsystem (EBI1) from low-speed peripherals (EBI2) such as LCD panels
- ☐ 1.8 V or 2.6 V memory interface support (excluding EBI1)
- ☐ NAND FLASH memory interface
 - 8/16-bit data I/O width NAND flash support
 - 1- or 4-bit ECC
 - 512-byte/2KB page-size support
 - 2 chip selects supported for NAND Flash
- ☐ Boot from NAND
- ☐ Low-power SDRAM (LP-SDRAM) interface

- Internal watchdog and sleep timers

3.8.7. Supported interface features

- USB On-the-Go core supports both slave and host functionality
- Three universal asynchronous receiver transmitter (UART) serial ports
- USIM controller (via UART)
- Integrated 4-bit secure digital (SD) controller for SD and Mini SD cards
- Parallel LCD interface
- General-purpose I/O pins
- External keypad interface

3. TECHNICAL BRIEF

3.8.8. Supported multimedia features

- Provide additional general purpose MIPS by using:
 - Two QDSP4000s
 - Dedicated hardware accelerators and compression engines
- Improve Java, BREW, and game performance
 - Integrated Java and 2D/3D graphics accelerator with Sprite engine
- Enable various accessories via USB host connectivity.
 - Integrated USB host controller functionality
- Enable compelling visual and audio applications.

Qcamera™

- High-quality digital camera processing, supporting CCD or CMOS image sensors up to 4-megapixel with 15 fps capture rate
- 15 fps QVGA viewfinder

Qtv™

- Audio and video decoder that supports VOD, MOD and Broadcast multimedia services.
- Audio Codecs supported: AMR-NB, AAC, AAC Plus, Enhanced AAC Plus, Windows® Audio v9, RealAudio® v8
- Integrated stereo wideband Codec for music/digital clips
- CMX
- Video Codecs supported: MPEG-4, H.263, H.264, Windows Media® v9 and RealNetworks® v10

Video telephony services: Qvideophone™

- A two-way mobile video conferencing solution that delivers 15 fps @ QCIF
- Video Codecs supported: MPEG-4 and H.263
- Audio Codecs supported: AMR-NB.

Qcamcorder™

- Real time mobile video encoder
- Video Codecs supported: MPEG-4, H.263, H.264
- Audio Codecs supported: AMR-NB, AAC
- Recording performance: 15 fps @ QVGA, 384 kbps

CMX™ (MIDI and still image, animation, text, LED/vibrate support)

- 72 simultaneous polyphonic tones
- 44 kHz sampling rate
- 512 kB wave table
- Support of universal file formats
 - ☐ Standard MIDI Format (SMF)
 - ☐ SP-MIDI
 - ☐ SMAF Audio playback (MA-2, MA-3, MA-5)
 - ☐ XMF/OLS
 - ☐ MFI (requires Docomo license)
- PNG decoder
- Pitch bend range support
- LED/vibrate support
- Scalable Vector Graphics (SVG- Tiny 1.1 + SVG Tiny 1.2)
- MLZ decoder
- Integrated PNG/SAF A.T.

Features	MSM6280 device
Processor	ARM926 EJ-S – 225 MHz and 270 MHz (for 3.6 Mbps and 7.2 Mbps HSDPA) ADSP – 75 MHz and 90 MHz (for 3.6 Mbps and 7.2 Mbps HSDPA) MDSP – 61.44 MHz
Process technology	90 nm
Broadcast	TSIF (dedicated)
High speed serial interface	Mobile display digital interface (MDDI)
Security/digital rights management	OMA DRM v2.0 Q-fuse supported
Supported RF platforms	Tri-band UMTS (3U), Platform B (RFCMOS), Platform D (Diversity)
gpsOne	Supported
16-bit burst NOR flash + 16-bit or 32-bit burst PSRAM	Not supported
8-bit or 16-bit NAND flash + 32-bit SDRAM	Supported Only 32-bit SDRAM supported
USB	USB-OTG
Qcamcorder	15 fps @ QVGA, 15 fps QVGA viewfinder
Qtv (video decode)	30 fps @ QVGA playback 15 fps @ QVGA streaming
Qvideophone (video telephony)	15 fps @ QCIF
Qcamera (camera interface)	4M pixel support
Audio/video decoders	MP3, AAC, AAC+, Enhanced AAC+ ADPCM, MP4, H.263, H.264, Windows Media, Real
2D/3D graphics HW acceleration	HW – 100K triangles/sec

Table 1-1 Summary of MSM6280 device features

3. TECHNICAL BRIEF

3.8.9. Serial Bus Interface(SBI)

The MSM6280 device's SSBI is designed specifically to be a quick, low pin count control protocol for QUALCOMM's RTR6275, RFR6275 and PM6650 ASICs. Using the SSBI, the RTR6275, RFR6275, and PM6650 devices can be configured for different operating modes and for minimum power consumption, extending battery life in Standby mode. The SSBI also controls DC baseband offset errors.

3.8.10. Wideband CODEC

The MSM6280 device integrates a wideband voice/audio CODEC into the mobile station modem (MSM). The CODEC supports two differential microphone inputs, one differential earphone output, one single-ended earphone output, and a differential analog auxiliary interface.

The CODEC integrates the microphone and earphone amplifiers into the MSM6280 device, reducing the external component count to just a few passive components.

The microphone (Tx) audio path consists of a two-stage amplifier with the gain of the second stage set internally. The Rx/Tx paths are designed to meet the ITU-G.712 requirements for digital transmission systems.

3.8.11. Vocoder Subsystem

The MSM6280 device's QDSP4000 supports AMR, FR, EFR and HR. In addition, the QDSP4000 has modules to support the following audio functions: DTMF tone generation, DTMF tone detection, Tx/Rx volume controls, Tx/Rx automatic gain control (AGC), Rx Automatic Volume Control (AVC), EarSeal Echo Cancellor (ESEC), Acoustic Echo Cancellor (AEC), Noise Suppression (NS), and programmable, 13-tap, Type-I, FIR, Tx/Rx compensation filters. The MSM6280 device's integrated ARM9TDMI processor downloads the firmware into the QDSP4000 and configures QDSP4000 to support the desired functionality.

3.8.12. ARM Microprocessor subsystem

The MSM6280 device uses an embedded ARM926EJ-S microprocessor. This microprocessor, through the system software, controls most of the functionality for the MSM device, including control of the external peripherals such as the keypad, LCD, RAM, ROM, and EEPROM devices. Through a generic single serial bus interface (SSBI) the ARM926EJ-S configures and controls the functionality of the RFR6275, RTR6275, and PM6650 devices.

3.8.13. Mode Select and JTAG Interfaces

The mode pins to the MSM6280 device determine the overall operating mode of the ASIC. The options under the control of the mode inputs are Native mode, which is the normal subscriber unit operation, ETM mode, which enables the built-in trace mode, and test mode for factory testing. The MSM6280 device meets the intent of the ANSI/IEEE 1149.1A-1993 feature list. The JTAG interface can be used to test digital interconnects between devices within the mobile station during manufacture.

3.8.14. General-Purpose Input/Output Interface

The MSM6280 device has general-purpose bidirectional input/output pins. Some of the GPIO pins have alternate functions supported on them. The alternate functions include USB interface, additional RAM, ROM, general-purpose chip selects, parallel LCD interface, and a UART interface. The function of these pins is documented in the various software releases.

3.8.15. UART

The MSM6280 device employs three UARTs. UART1 has dedicated pins while UART2 and UART3 share multiplexed pins.

- UART1 for data
- UART2 (can be used for USIM interface)
- UART3 for data

3.8.16. USB

The MSM6280 device integrates a universal serial bus (USB) controller that supports both unidirectional and bidirectional transceiver interfaces. The USB controller acts as a USB peripheral communicating with the USB host.

3. TECHNICAL BRIEF

3.9. Power Block

3.9.1. General

MSM6280, included RF, is fully covered by PM6650(Qualcomm PMIC). PM6650 cover the power of MSM6280, MSM memory, RF block, Bluetooth, Micro SD, USIM and TCXO.

Major power components are :

PM6650-2M (U513, Main PCB) : Phone power supply

MAX8630ZETD (U2, Slide PCB) : LCD Backlight charge pump

3.9.2. PM6650

The PM6650 device (Figure 1-1) integrates all wireless handset power management. The power management portion accepts power from all the most common sources - battery, external charger, adapter, coin cell back-up - and generates all the regulated voltages needed to power the appropriate handset electronics. It monitors and controls the power sources, detecting which sources are applied, verifying that they are within acceptable operational limits, and coordinates battery and coin cell recharging while maintaining the handset electronics supply voltages. Eight programmable output voltages are generated using low dropout voltage regulators, all derived from a common trimmed voltage reference.

A dedicated controller manages the TCXO warm-up and signal buffering, and key parameters (under-voltage lockout and crystal oscillator signal presence) are monitored to protect against detrimental conditions.

MSM device controls and statuses the PM6650 IC using Single Serial Bus Interface (SSBI) supplemented by an Interrupt Manager for time-critical information. Another dedicated IC Interface circuit monitors multiple trigger events and controls the power-on sequence.

3. TECHNICAL BRIEF

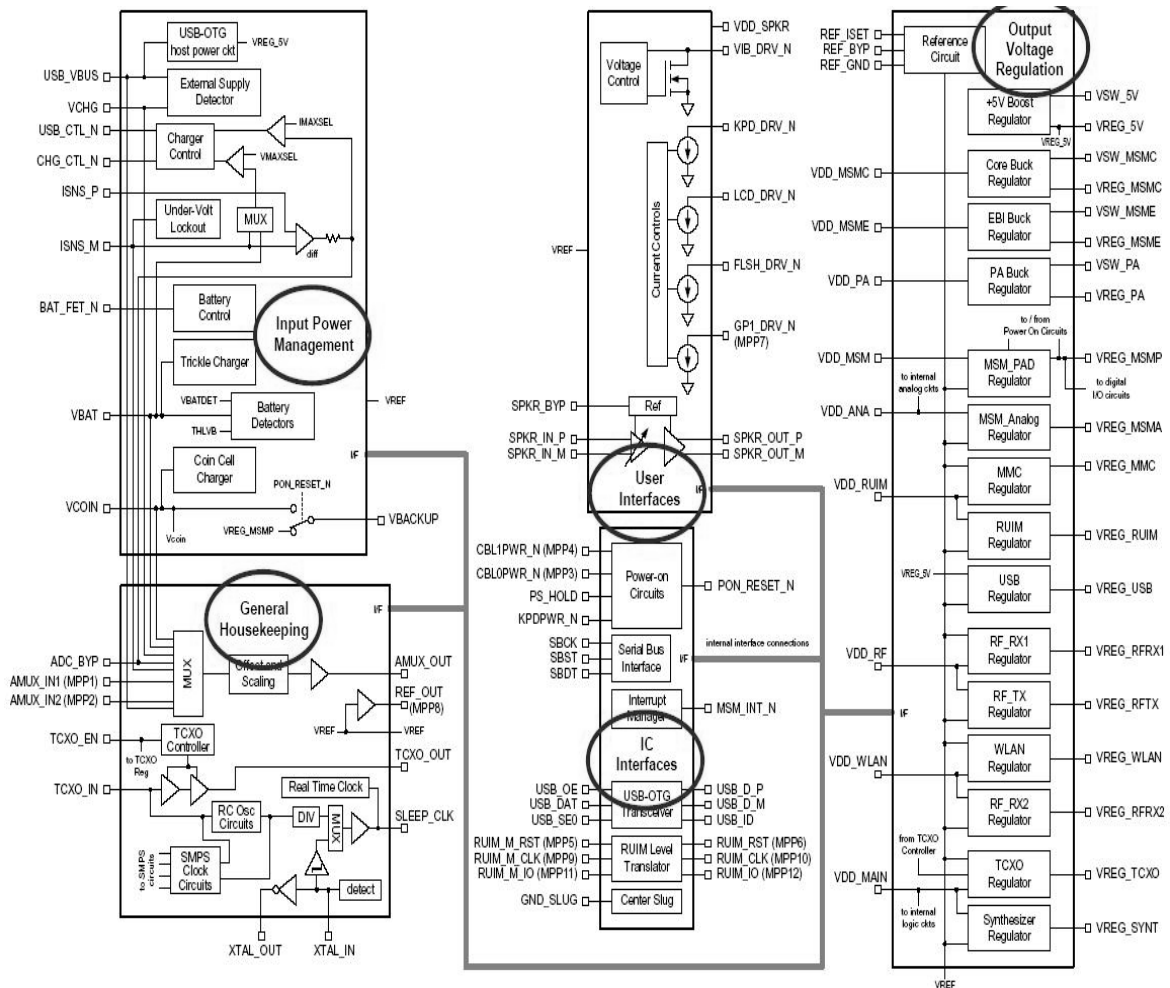
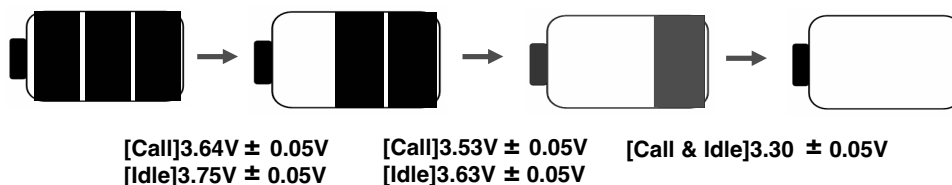
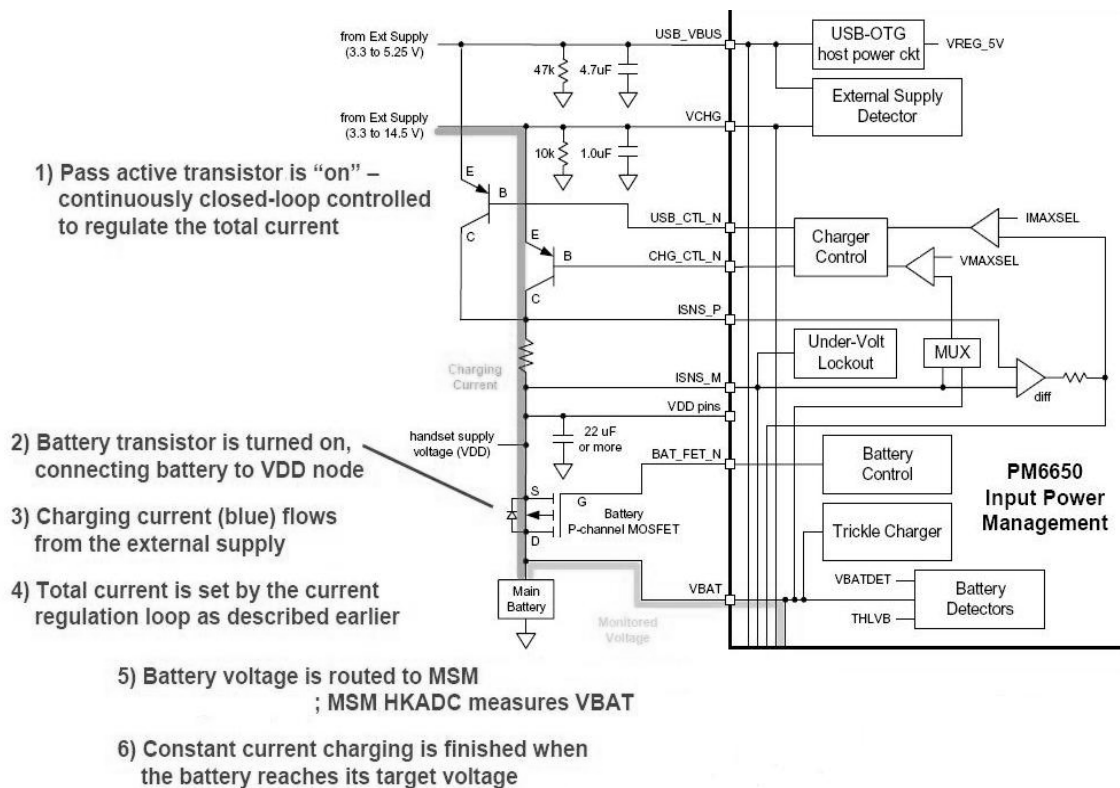


Figure. PM6650 Functional Block Diagram

3. TECHNICAL BRIEF

3.9.3. Charging control

A programmable charging block in PM6650 is used for battery charging. It is possible to set limits for the charging current. The external supply typically connects directly to pin (VCHG). The voltage on this pin (VCHG) is monitored by detection circuitry to ascertain whether a valid external supply is applied or not. For additional accuracy or to capture variations over time, this voltage is routed internally to the housekeeping ADC via the analog multiplexer. PM6650 circuits monitor voltages at VCHARGER and ICHARGE pins to determine which supply should be used and when to switch between the two supplies. These pins are connected to the Source (or emitter) and Drain (or collector) contacts of the pass transistor respectively.

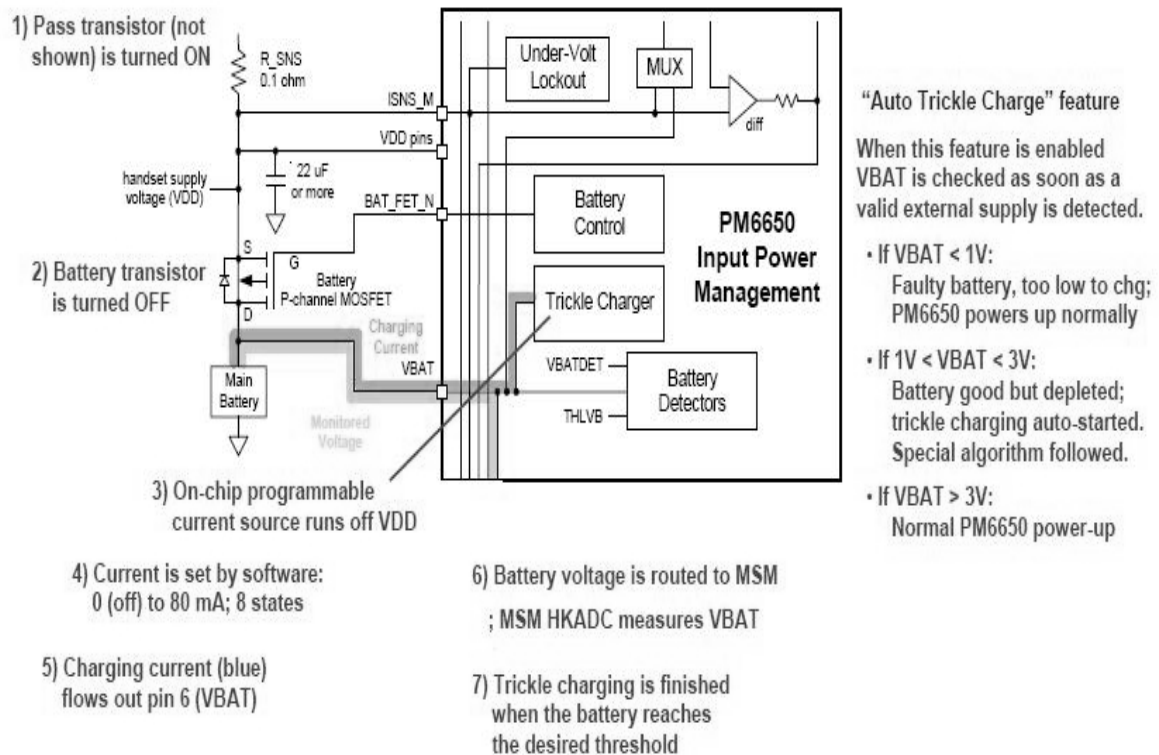


L704i Battery Bar Display

Trickle Charging

Trickle Charging of the main battery, enabled through SBI control and powered from VDD, is provided by the PM6650 IC. The trickle charger is on-chip programmable current source that supplies current from VDD to pin (VBAT). Trickle charging can be used for lithium-ion and nickelbased batteries, with its performance specified below (3.2V). The charging current is set to 80mA.

Parameter	Min	Typ	Max	Unit
Trickle Current	60	80	100	mA



3. TECHNICAL BRIEF

Constant Current Charging

The PM6650 IC supports constant current charging of the main battery by controlling the charger pass transistor and the battery transistor. The constant current charging continues until the battery reaches its target voltage, 4.2V.

Constant Voltage Charging

Constant voltage charging begins when the battery voltage reaches a target voltage, 4.2V.

The end of constant voltage charging is commonly detected 10% of the full charging current (140mA)

- Charging Method : CC & CV (Constant Current & Constant Voltage)
- Maximum Charging Voltage : 4.2V
- Maximum Charging Current : 600mA
- Nominal Battery Capacity : 1000 mAh
- Charger Voltage : 5.4V
- Charging time : Max 160min (Except time trickle charging)
- Full charge indication current (icon stop current) : 140mA
- Low battery message : $3.30 \pm 0.05V$
- Cut-off : [Idle] 60s after Low battery message
 [Call] 80s after Low battery message

3.10. External memory interface

A. MSM6280

The MSM6280 device was designed to provide two distinct memory interfaces. EBI1 was targeted for supporting high speed synchronous memory devices. EBI2 was targeted towards supporting slower asynchronous devices such as LCD, NAND flash, SRAM, etc.

- EBI1 Features

- 16 bit static and dynamic memory interface
- 32 bit dynamic memory interface
- 24 bits of address for static memory devices which can support up to 32MBytes on each chip select
- Synchronous burst memories supported (burst NOR, burst PSRAM)
- Synchronous DRAM memories supported
- Byte addressable memory supporting 8 bit, 16 bit and 32 bit accesses
- Pseudo SRAM (PSRAM) memory support

- EBI2 Features

- Support for asynchronous FLASH and SRAM(16bit & 8bit).
- Interface support for byte addressable 16bit devices(UB_N & LB_N signals).
- 2Mbytes of memory per chip select.
- Support for 8 bit/16bit wide NAND flash.
- Support for parallel LCD interfaces, port mapped of memory mapped(18 or 16 bit)

- 2Gb NAND(16bit) flash memory + 1Gb SDRAM (32bit)

- 1-CS(Chip Select) is used

Interface Spec				
Device	Part Name	Maker	Read Access Time	Write Access Time
FLASH	TYA000BC00DOGG	Toshiba	50 ns	50 ns
SDRAM	TYA000BC00DOGG	Toshiba	15 ns	15 ns

Table#1. External memory interface for L704i

3. TECHNICAL BRIEF

3.11. H/W Sub System

3.11.1. RF Interface

A. RTR6275(WCDMA_Tx, GSM_Tx/Rx)

MSM6280 controls RF part(RTR6275) using these signals.

- SSBDT_RTR : SSBI I/F signals for control Sub-chipset
- RX_I/Q_M/P, TX_I/Q_M/P : I/Q for T/Rx of RF
- TX_AGC_ADJ : control the gain of the Tx signal prior to the power amplifier

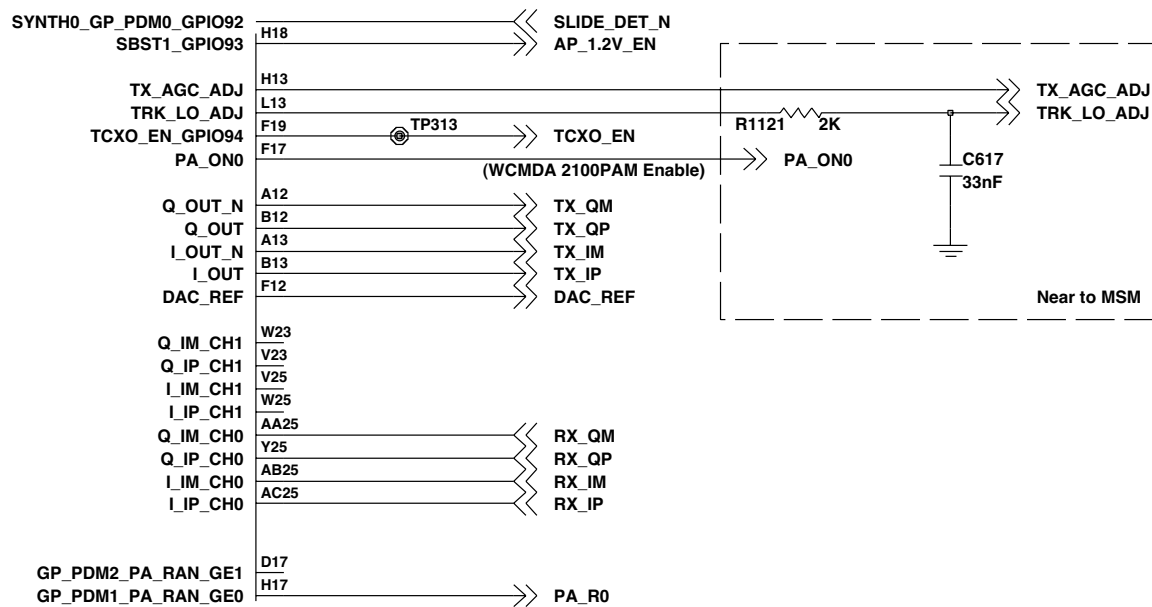


Figure. Schematic of RF Interface of MSM6280

B. RFR6275(WCDMA_Rx)

- SSB DT_RFR : SSBI I/F signals for control Sub-chipset
- RX_I/Q_M/P : I/Q for Rx of RF

C. the others

- TRK_LO_ADJ : TCXO(19.2M) Control
- PA_ON1 : WCDMA(800), WCDMA(2100) TX Power Amp Enable
- ANT_SEL[0-3] : Ant Switch Module Mode Selection(WCDMA,GSM Tx/Rx,DCS-PCS Tx/Rx)
- GSM_PA_BAND : GSM/DCS-PCS Band Selection of Power Amp
- GSM_PA_RAMP : Power Amp Gain Control of APC_IC
- GSM_PA_EN : Power Amp Gain Control Enable of APC_IC

3. TECHNICAL BRIEF

3.11.2. MSM Sub System

3.11.2.1. USIM Interface

SIM interface scheme is shown in Figure.

And, there control signals are followed

- USIM_CLK : USIM Clock
- USIM_Reset : USIM Reset
- USIM_Data : USIM Data T/Rx

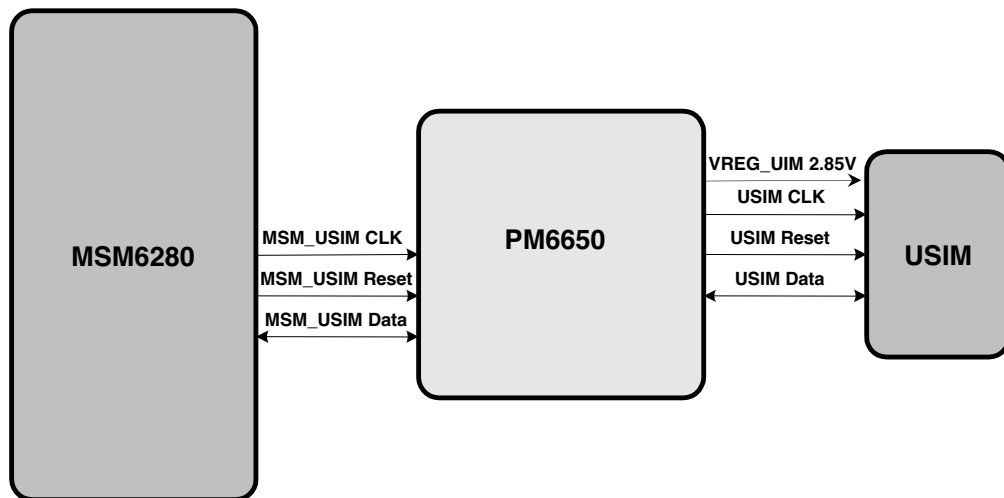


Figure. SIM Interface

3.11.2.2. UART Interface

UART signals are connected to MSM GPIO through IO connector with 115200 bps speed.

GPIO_Map	Name	Note
GPIO_96	UART_RXM	Data_Rx
GPIO_95	UART_TXM	Data_Tx

Table. UART Interface

3.11.2.3. USB

The MSM6280 device contains a Universal Serial Bus (USB) interface to provide an efficient interconnect between the mobile phone and a personal computer (PC). The USB interface of the MSM6280 was designed to comply with the definition of a peripheral as specified in USB Specification, Revision 1.1. Therefore, by definition, the USB interface is also compliant as a peripheral with the USB Specification, Revision 2.0.

The USB Specification Revision 1.1 defines two speeds of operation, namely low-speed (1.5 Mbps) and full-speed (12 Mbps), both of which are supported by the MSM6280.

Name	Note
USB_DAT	Data to/from MSM
USB_SE0	Data to/from MSM
USB_OE_N	Out-Put Enable of Transceiver
USB_VBUS	USB_Power From Host(PC)
USB_D+	USB Data+ to Host
USB_D-	USB Data- to Host

Table. USB Signal Interface

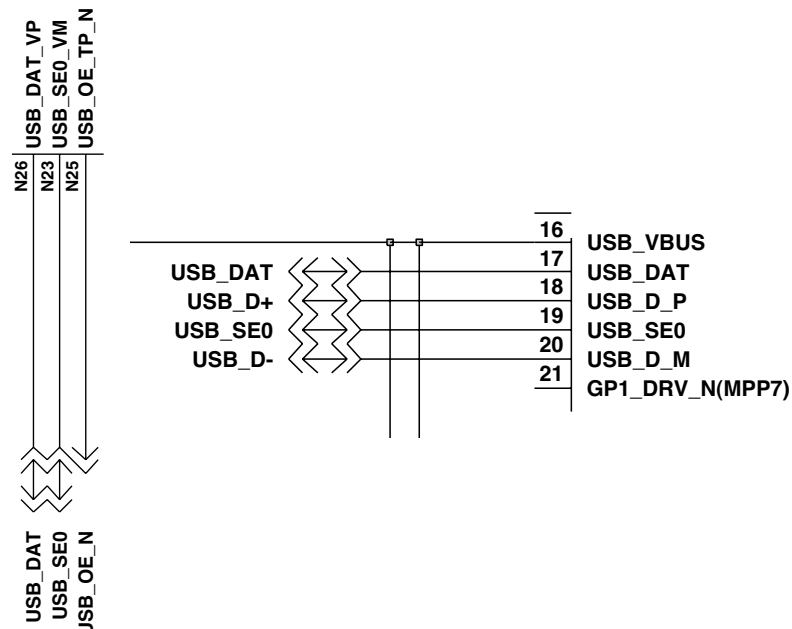


Figure. Schematic of USB block(MSM6280Side & PM6650 Side)

3. TECHNICAL BRIEF

L704i has a protective circuit for non-booting from USB. When the phone is booted from USB_VBUS without Battery, booting current might be insufficient. Sometimes, this scheme can break the USB port on a computer. So, L704i does not support booting from USB.

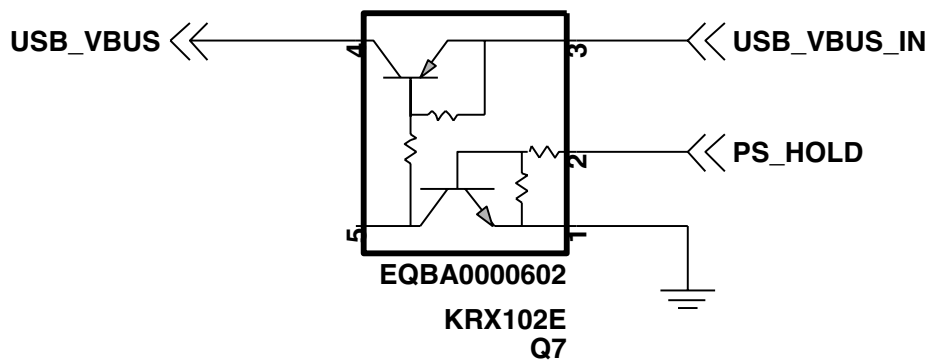


Figure. Schematic of USB protective circuit

3.11.3. HKADC(House Keeping ADC)

The MSM6280 device has an on-chip 8-bit analog-to-digital converter (HKADC) which is tended to digitize DC signals corresponding to analog parameters such as battery voltage, temperature, and RF power levels. The MSM6280 device has six analog input pins which are multiplexed to the input of the internal HKADC.

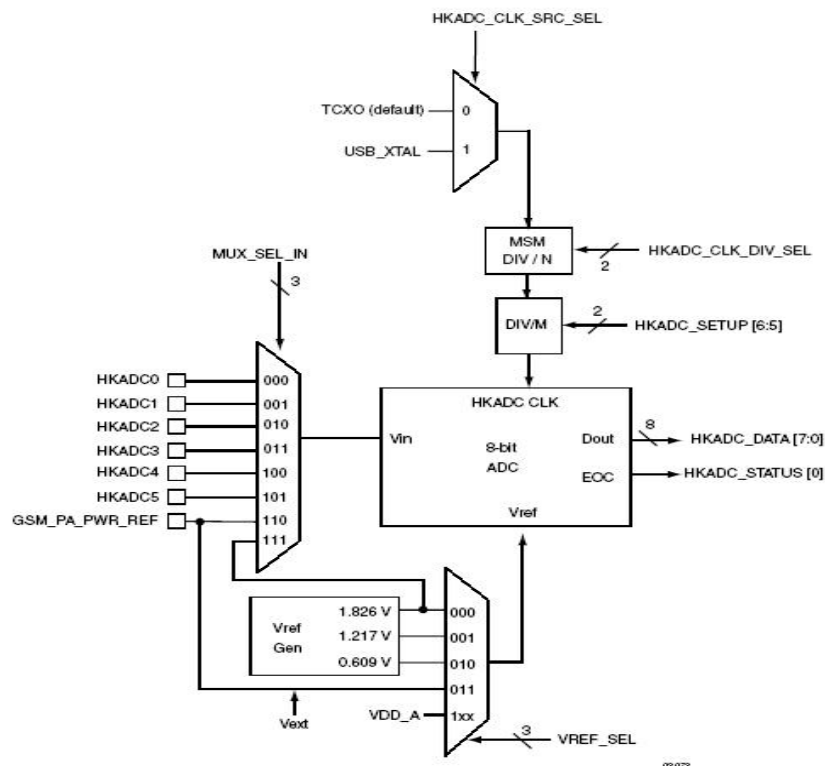


Figure. MSM6280HKADC Block diagram

Channel	Signal	Note
HKADC0	PM_ADC	PMIC ADC Input
HKADC1	VBATT_SENSE	Battery voltage level detect
HKADC2		
HKADC3		
HKADC4	PCB_Rev_ADC	PCB Version Check
HKADC5	VBATT_TEMP	Battery Temperature Check

Table. HKADC channel table

3. TECHNICAL BRIEF

3.11.4. Key Pad

There are 17 buttons and 5 side keys in Figure. Shows the Keypad circuit. 'END' Key is connected On_SW to PMIC(PM6650).

	COL(0)	COL(1)	COL(2)	COL(3)
ROW0	1	2	Up	Music
ROW(1)	3	4	Down	
ROW(2)	5	6	Multi	
ROW(3)	7	8	9	
ROW(4)	0	#	*	

Table. Key Matrix Mapping Table

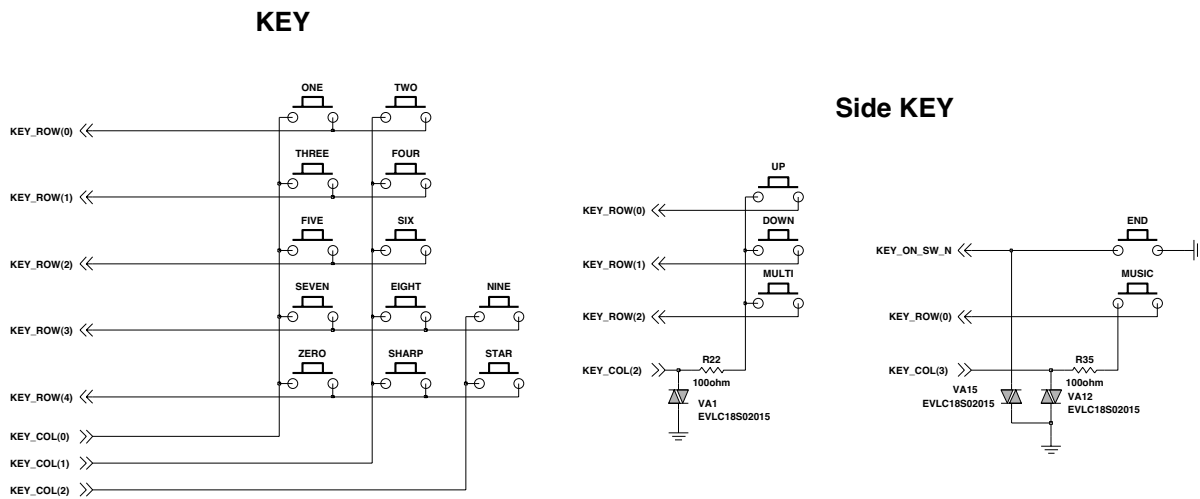


Figure. Keypad Circuit

3.11.5. Camera Interface

L704i Installed VGA(0.3 mega Pixel) Camera and 2 Mega Pixel Auto Focus Camera. Below figure shows the camera board to board connector and camera I/F signal.

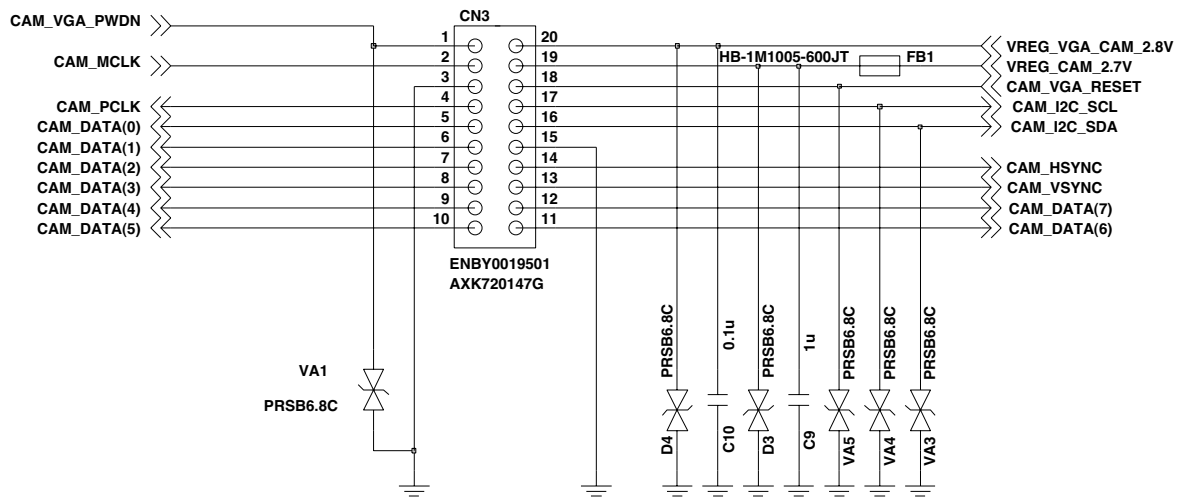


Figure. VGA Camera and Slide FPCB Board to Board Connector

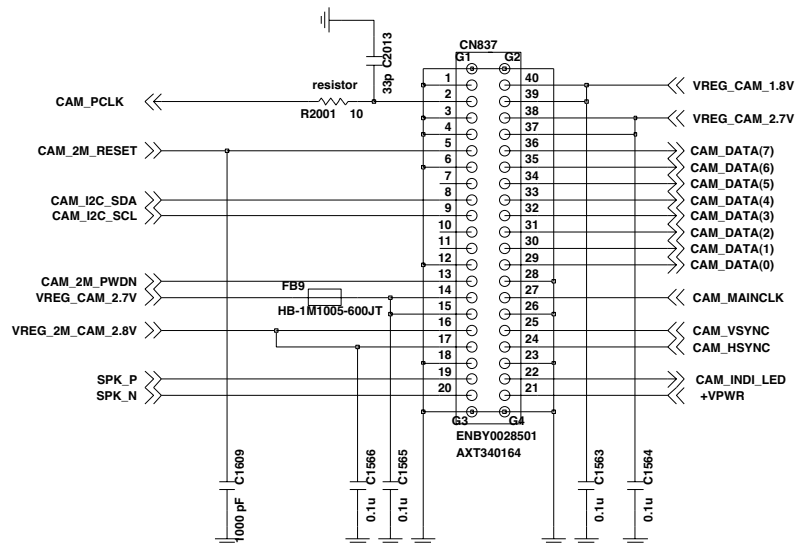


Figure. 2Mega Camera and Camera FPCB Board to Board Connector

3. TECHNICAL BRIEF

VGA Camera module is connected to Slide FPCB with 20pin Board to Board connector (AXK720147G). Its interface is dedicated camera interface port in MSM6280. The camera port supply 13.5MHz master clock to camera module and receive 13.5MHz pixel clock (15fps), vertical sync signal, horizontal sync signal, reset signal and 8bits data from camera module. The camera module is controlled by I2C port from MSM6280.

No	Name	Port	Note
1	CAM_PWDN	i	Camera power down
2	CAM_MCLK	I	Master Clock
3	GND	GND	GND
4	CAM_PCLK	O	Clock for Camera Data Out
5	CAM_DATA(0)	O	Data 0
6	CAM_DATA(1)	O	Data 1
7	CAM_DATA(2)	O	Data 2
8	CAM_DATA(3)	O	Data 3
9	CAM_DATA(4)	O	Data 4
10	CAM_DATA(5)	O	Data 5
11	CAM_DATA(6)	O	Data 6
12	CAM_DATA(7)	O	Data 7
13	CAM_VSYNC	O	Vertical Synch
14	CAM_HSYNC	O	Horizontal Sync
15	GND	GND	GND
16	I2C_SDA	I	I2C Data
17	I2C_SCL	I	I2C Clock
18	CAM_RESET_N	I	Camera reset signal
19	VREG_CAM_2.7V	I	Camera DVDD 2.7V
20	VREG_VGA_CAM_2.8V	I	Camera AVDD 2.8V

Table. Interface between VGA Camera and Slide FPCB (in camera module)

3. TECHNICAL BRIEF

2 Mega Camera module is connected to Camera FPCB with 34pin Board to Board connector (AXK7234227G). Its interface is dedicated camera interface port in MSM6280. The camera port supply 24.5MHz master clock to camera module and receive 49MHz pixel clock (15fps), vertical sync signal, horizontal sync signal, reset signal and 8bits data from camera module. The camera module is controlled by I2C port from MSM6280.

No.	Name	Port	Note
1	GND	GND	GND
2	CAM_PCLK	O	Clock for Camera Data Out
3	GND	GND	GND
4	GND	GND	GND
5	CAM_RESET_N	I	Camera reset signal
6	GND	GND	GND
7	NC	NC	NC
8	I2C_SDA	I	I2C Data
9	I2C_SCL	I	I2C Clock
10	NC	NC	NC
11	NC	NC	NC
12	GND	GND	GND
13	CAM_PWDN	I	Camera power down
14	VREG_CAM_2.7V	I	AF_Actuator_LVDD1_2.7V
15	VREG_CAM_2.7V	I	AF_Driver IC_LVDD2_2.7V
16	VREG_VGA_CAM_2.8V	I	CAM_AVDD_2.8V

Table1_1. Interface between 2 Mega Camera Module and Camera FPCB (in camera module)

3. TECHNICAL BRIEF

No.	Name	Port	Note
17	VREG_VGA_CAM_2.8V	I	CAM_AVDD_2.8V
18	CAM_VSYNC	O	Vertical Sync
19	CAM_HSYNC	O	Horizontal Sync
20	GND	GND	GND
21	CAM_MCLK	I	Master Clock
22	GND	GND	GND
23	CAM_DATA(0)	O	Data 0
24	CAM_DATA(1)	O	Data 1
25	CAM_DATA(2)	O	Data 2
26	CAM_DATA(3)	O	Data 3
27	CAM_DATA(4)	O	Data 4
28	CAM_DATA(5)	O	Data 5
29	CAM_DATA(6)	O	Data 6
30	CAM_DATA(7)	O	Data 7
31	VREG_CAM_2.7V	I	CAM_IOVDD_2.8V
32	VREG_CAM_2.7V	I	CAM_IOVDD_2.8V
33	VREG_CAM_1.8V	I	CAM_DVDD_1.8V
34	VREG_CAM_1.8V	I	CAM_DVDD_1.8V

Table1_2. Interface between 2 Mega Camera Module and Camera FPCB (in camera module)

3.11.6. Slide ON/OFF Operation

There is a magnet to detect the Slide ON/OFF status.

If a magnet is close to the hall-effect switch, the voltage at pin OUT of U504 goes to 0V. Otherwise, 2.7V. This SLIDE_DET_N signal is delivered to MSM6280 GPIO92.

Hall Sensor

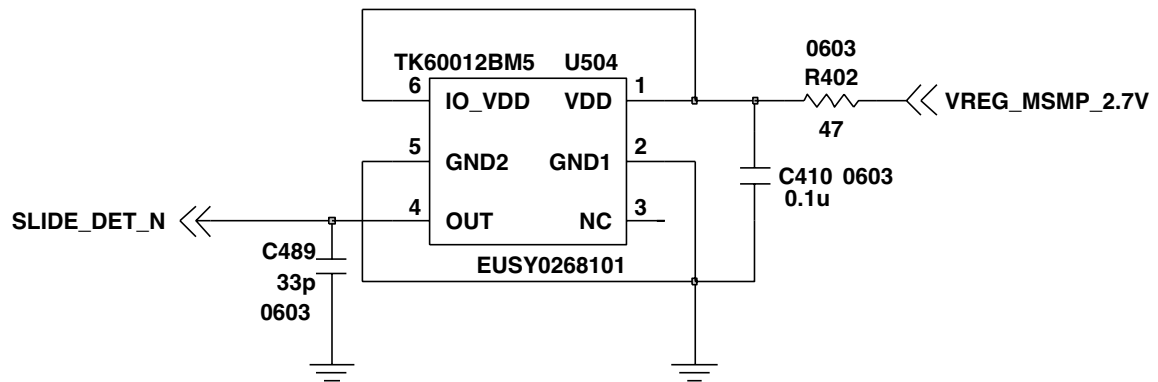


Figure. Schematic of Slide ON/OFF detection circuit

3. TECHNICAL BRIEF

3.11.7. Numeric Keypad Light & Touch LED Light

There are 2 White LEDs in SUB PCB, which are driven by SUB_LED_DRV_N line from PM6650.

KEYPAD LIGHTING

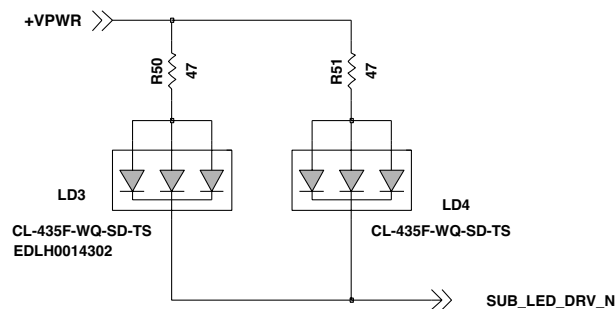


Figure. Numeric Keypad lighting Circuit

There are 7 Orange LEDs in Touch FPCB, which are driven by KEY_LED_DRV_N line from PM6650.

ORANGE LED

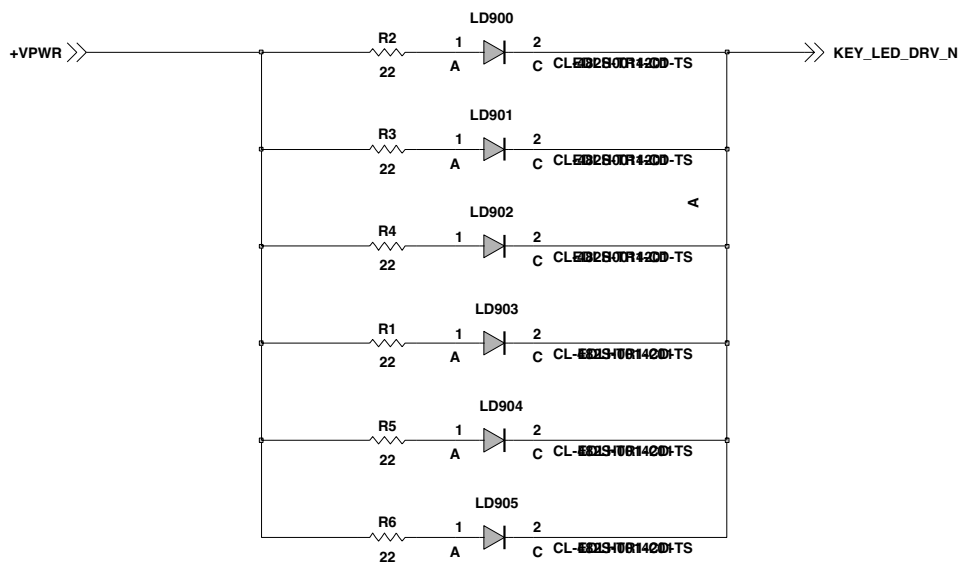


Figure. Touch Pad lighting Circuit

3.11.8. LCD Module (TX06D74VM0AAA : Hitachi LCD module)

- The TX06D74VM0AAA model is a Color TFT Main and MSTN Sub LCD supplied by Hitachi. This main Module has a 2.2 inch diagonally measured active display area with 240(RGB)X320 resolution. Each pixel is divided into Red, Green and Blue sub-pixels and dots which are arranged in vertical stripes.

* Features

- Display mode(Main LCD) : Normally Black, Transmissive TN mode 65K / 262K colors
- LCD Driver IC: BD66344(Source, Gate and Power IC)
- Driving Method : A-Si TFT Active Matrix
- 16 bit / 18 bit CPU interface Parallel

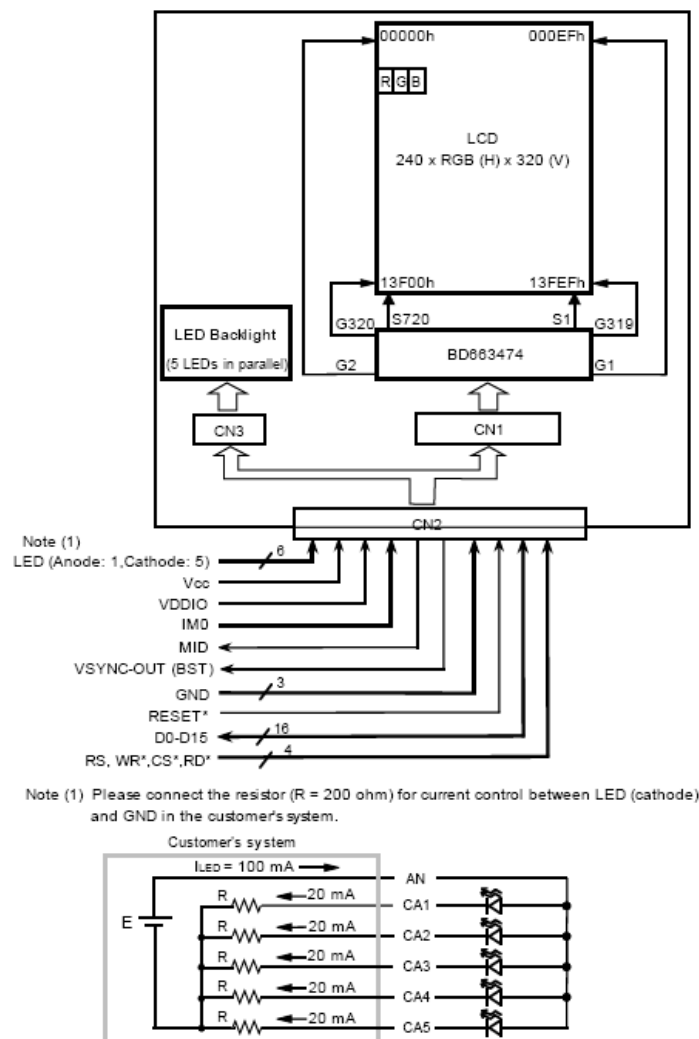


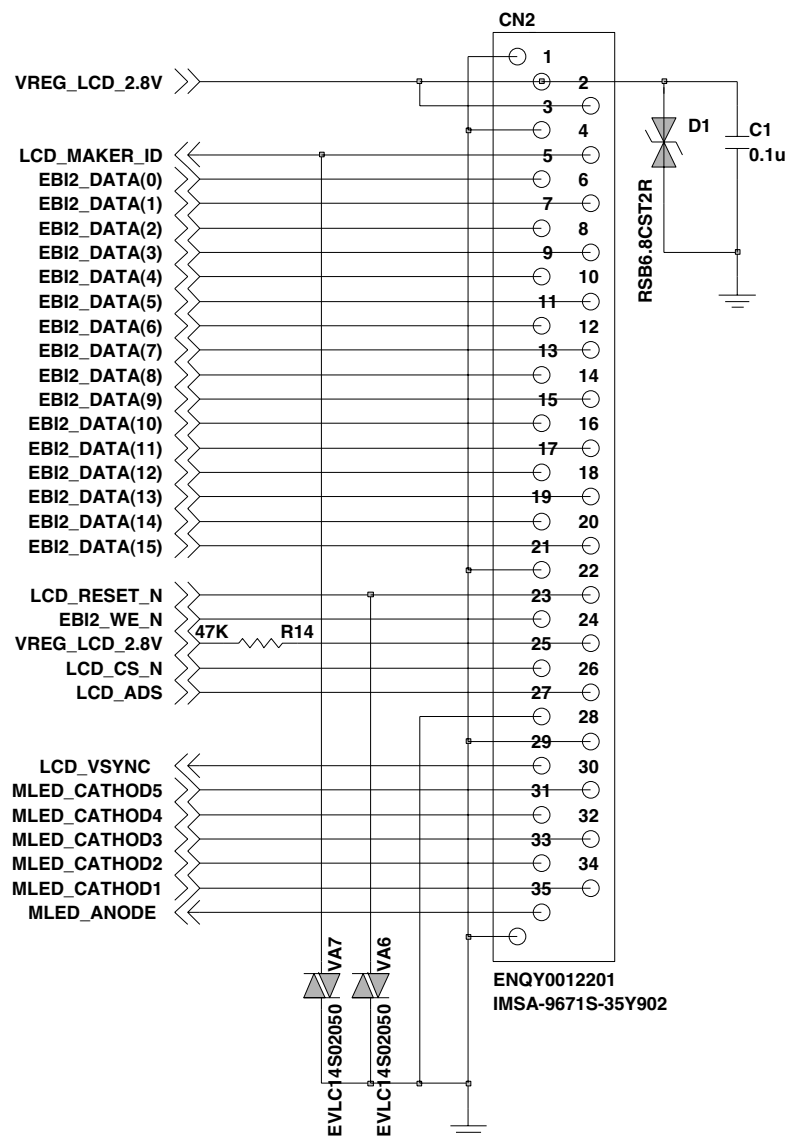
Figure. LCD Module Block Diagram

3. TECHNICAL BRIEF

3.11.9. Display & LCD FPC Interface

LCD module is connected to 35-pin zip connector (IMSA-9671S-35Y902) The LCD module is controlled by 16-bit EBI2 in MSM6280

< LCD CON >



3.11.9.1. Audio Signal Processing & Interface

Audio signal processing is divided uplink path and downlink path.

The uplink path amplifies the audio signal from MIC and converts this analog signal to digital signal and then transmits it to DBB Chip (MSM6280).

This transmitted signal is reformed to fit in GSM & WCDMA frame format and delivered to RF Chipset. The downlink path amplifies the signal from DBB chip (MSM6280) and outputs it to receiver (or speaker). The receive path can be directed to either one of two earphone amplifiers or the auxiliary output. The outputs earphone1 (EAR1OP, EAR1ON) and auxiliary out (AUXOP, AUXON) are differential outputs. Earphone2 (EAR2/EAR3) is a single-ended output stage designed to drive a headset speaker.

The microphone interface consists of two differential microphone inputs, one differential auxiliary input and a two-stage audio amplifier.

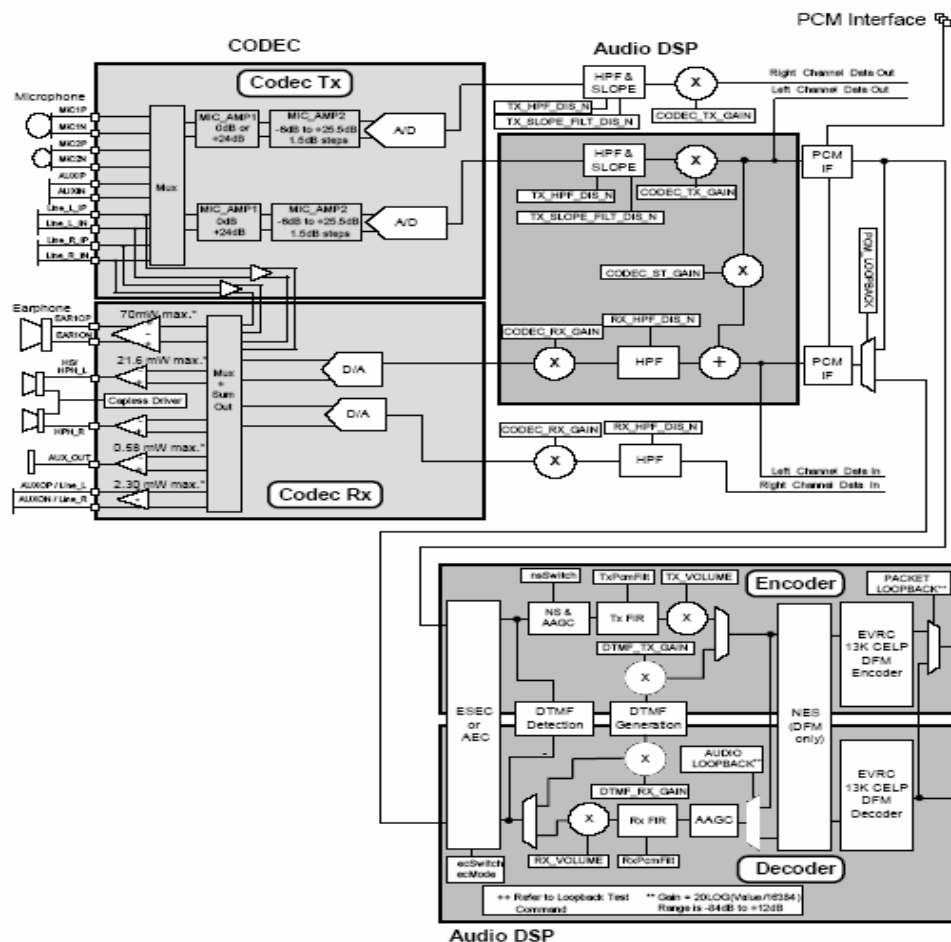


Figure. Audio Interface Detailed Diagram(MSM6280)

3. TECHNICAL BRIEF

MSM6280 CODEC pins

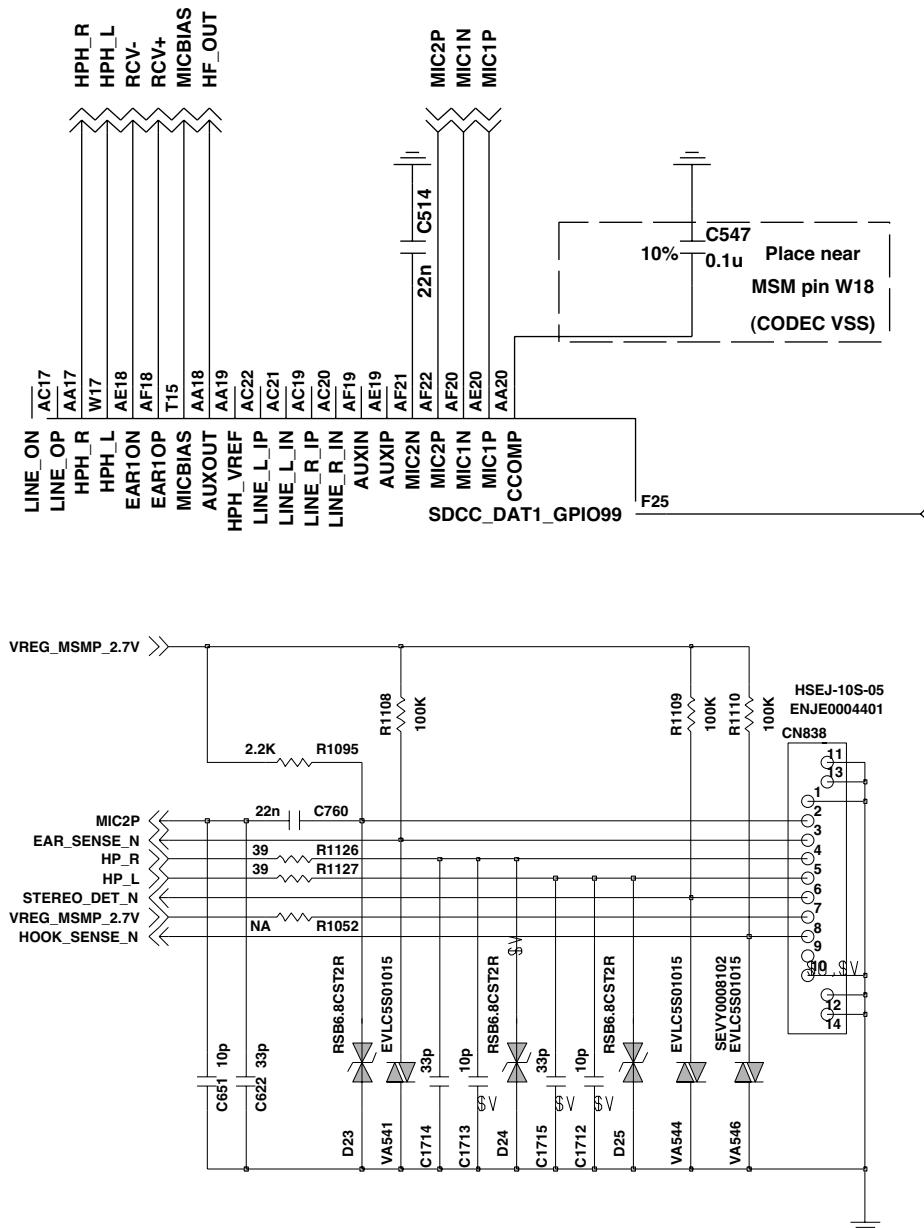
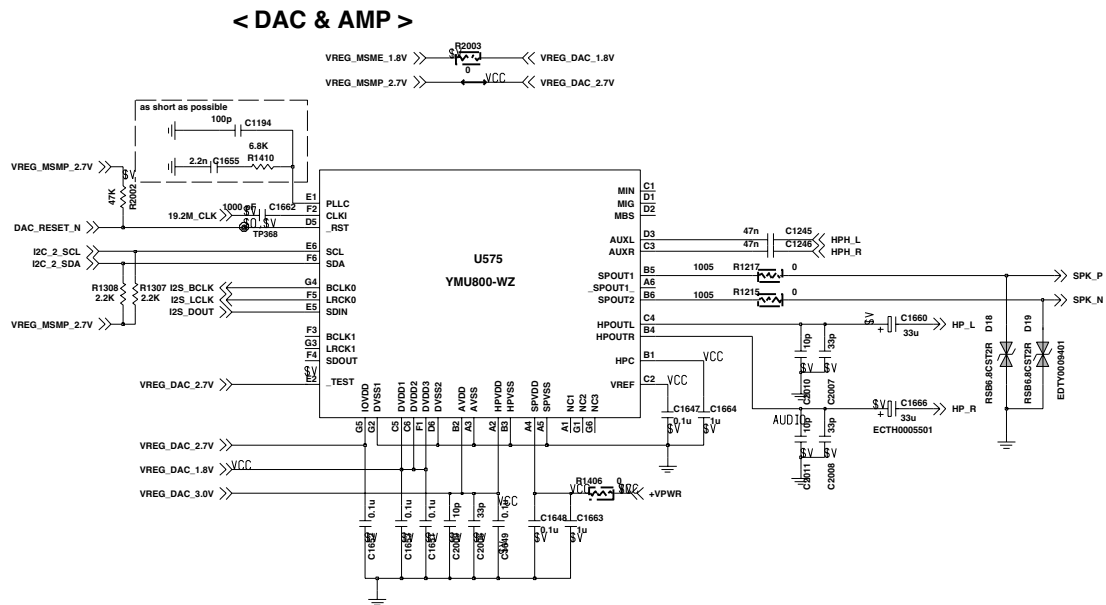


Figure . Audio part schematics

3. TECHNICAL BRIEF



MIC

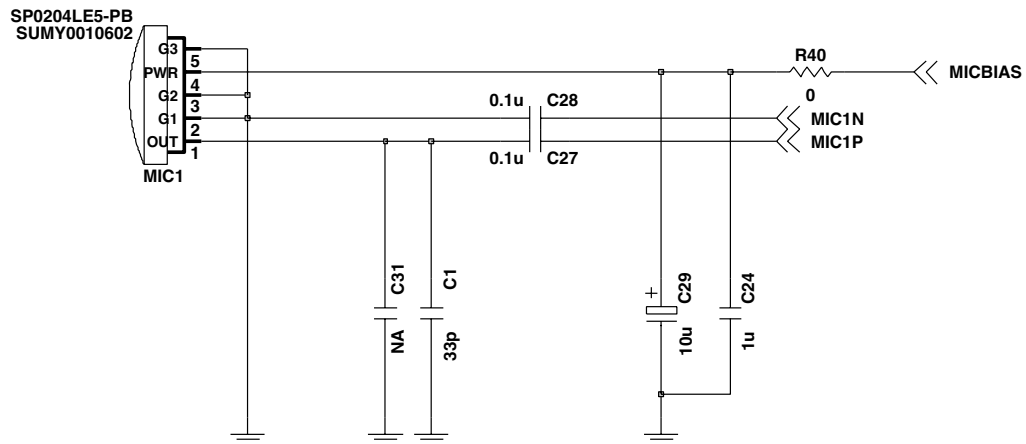


Figure . Audio part schematics

3. TECHNICAL BRIEF

3.11.9.2. Audio Mode

There are four audio modes (Voice call, speaker phone, VT phone, MIDI/SD contents).

MODE	Device	Description
Voice Call	Receiver Mode	Receiver Voice Call
	Loud Mode	Speaker Phone
	Headset	Headset Voice Call
VT phone	Receiver Mode	Receiver VT phone
	Loud Mode	Speaker VT phone
	Headset	Headset VT phone
Speaker phone	Loud Mode	Speaker Phone
MIDI	Loud Mode	Speaker MIDI Bell
	Headset	Headset MIDI Bell
SD contents	Loud Mode	Speaker MP3
	Headset	Headset MP3

Table. Audio Mode

Audio & Sound Main Component

There are 7 main components in L704i.

	Component	Design No.	Maker Part No.	Note
1	MSM6280	U507	MSM6280	Base-Band Modem
2	Audio Processor	U545	AP131	Audio Processor LSI with SD Interface
3	DAC & AMP	U575	YMU800-WZ	Class-D Audio Amp & DAC
4	Loud Speaker		EMS1634AP	8 ohm Speaker
5	Receiver		EMR0906SP	32 ohm receiver
6	MIC	MIC1	SP0204LE5-PB4	-42 dB microphone
7	Ear jack	CN838	HSEJ-10S-05	Ear jack

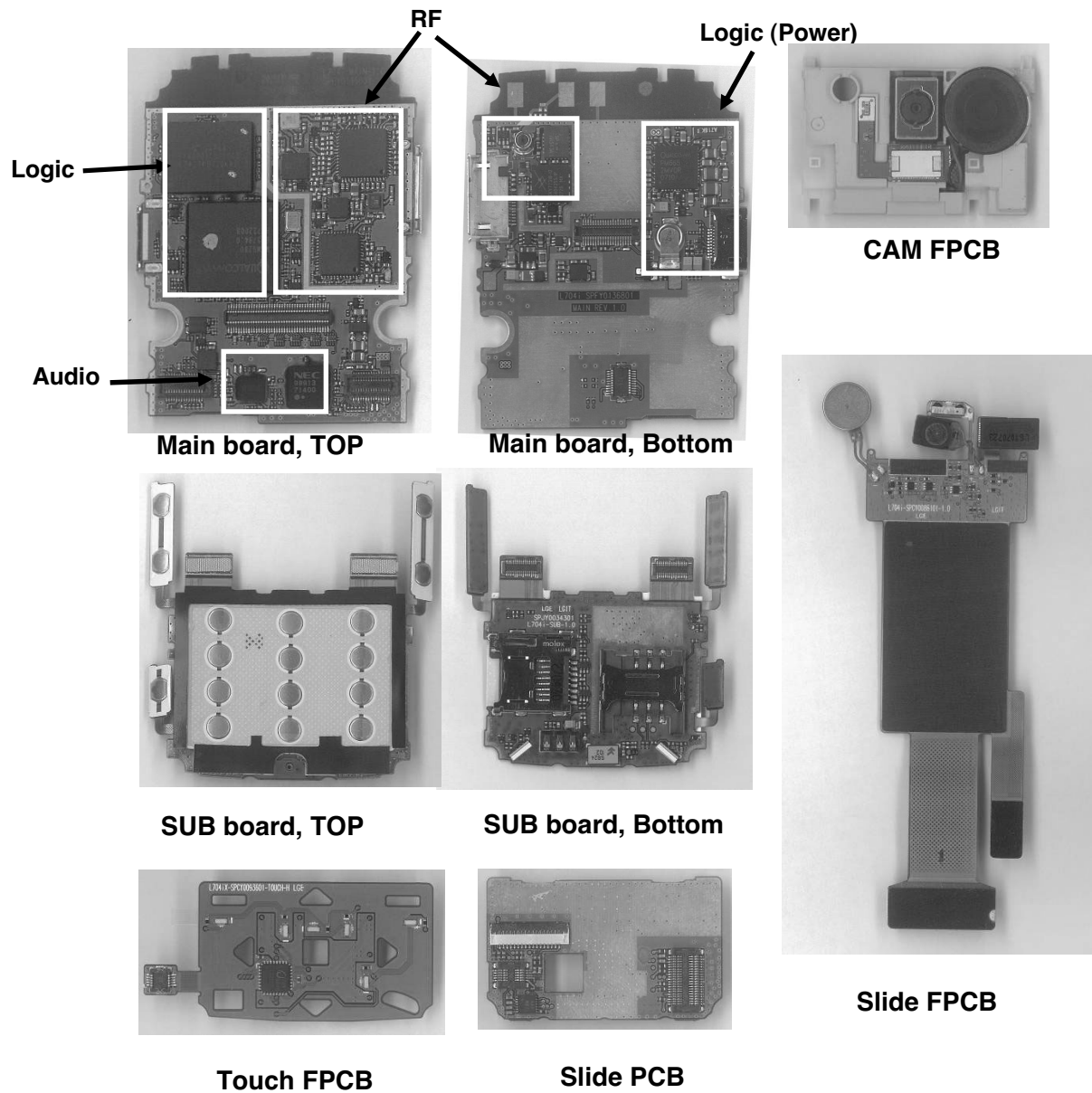
3.12 Main Features

1-1. L704i Main features

- Slide Type
- WCDMA(850, 1900) + GSM Tri(Class10)
- Color LCD(Main:260K TFT, 2.2')
- VGA(0.3M) Camera
- 16 phi speaker
- Stereo Headset
- Speaker phone(in GSM and WCDMA)
- 68 Polyphonic MIDI Sound
- 3gp/AAC decoder and play
- MPEG4 encoder/decoder and play/save
- JPEG en/decoder
- Supports IrDA, USB
- 1,000 mAh (Li-Ion)

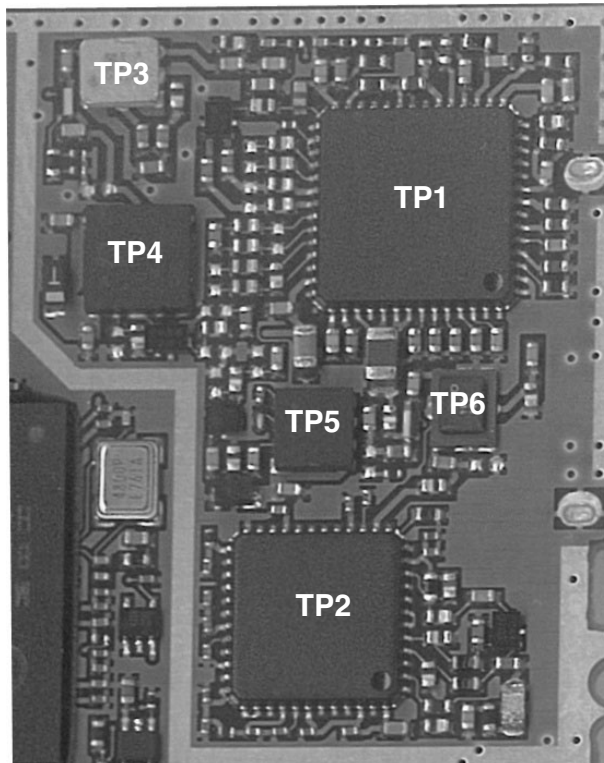
3. TECHNICAL BRIEF

2. L704i Main Component

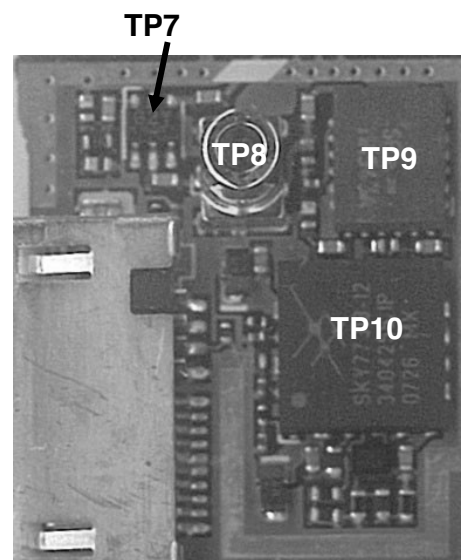


3. TECHNICAL BRIEF

RF



Main board, TOP

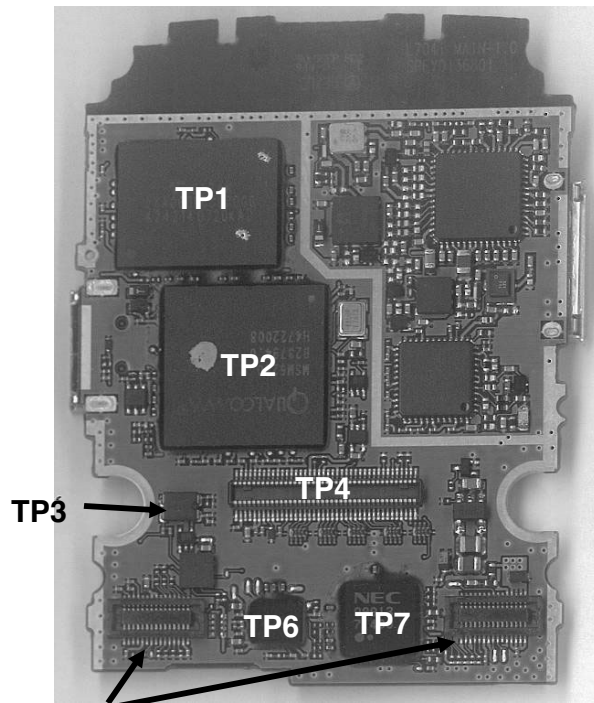


Main board, Bottom

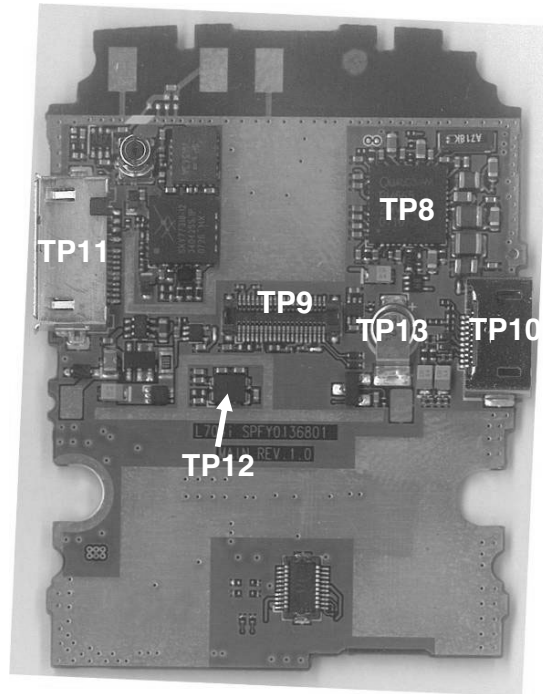
Reference	Description	Reference	Description
TP1	RTR6275	TP6	W800 Duplexer
TP2	RFR6275	TP7	SPDT
TP3	W2100 Duplexer	TP8	ANT. Switch
TP4	W2100 PAM	TP9	Front End Module
TP5	W800 PAM	TP10	GSM PAM

3. TECHNICAL BRIEF

Audio/logic MAIN PCB



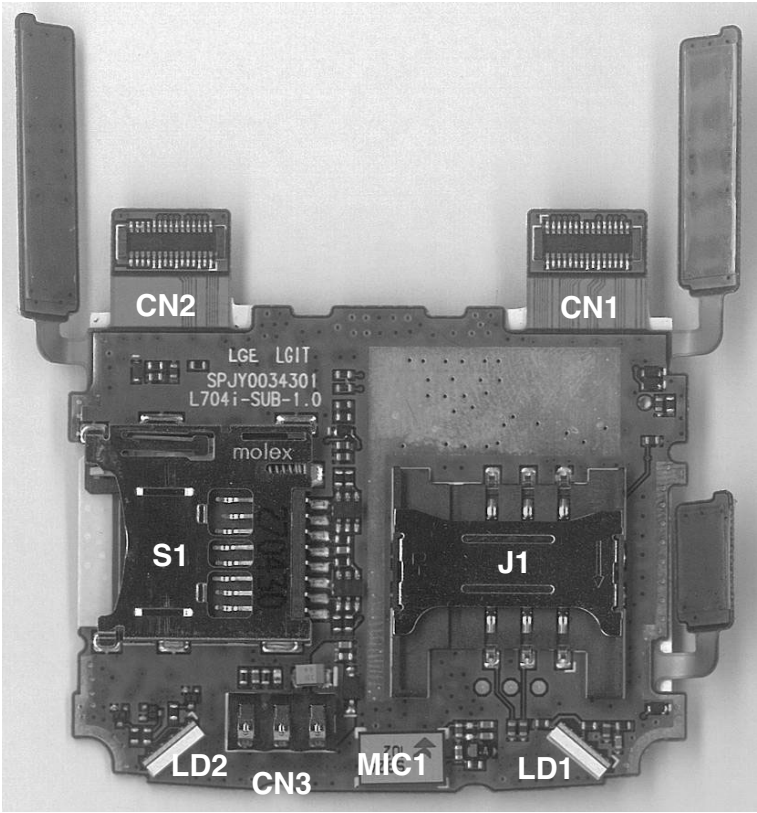
TP5 Main board, TOP



Main board, Bottom

Reference	Description	Reference	Description
TP1	Memory	TP8	PMIC
TP2	MSM6280	TP9	CAM FPCB Connector
TP3	Crystal 19.2M	TP10	Ear jack Connector
TP4	Slide FPCB Connector	TP11	I/O Connector
TP5	SUB PCB Connector	TP12	Crystal 19.2M
TP6	DAC, SPK/HP AMP	TP13	Backup Battery
TP7	Audio Processor		

Audio/logic SUB PCB

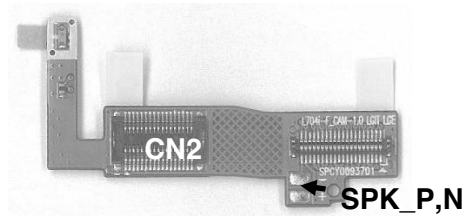


SUB board, Bottom

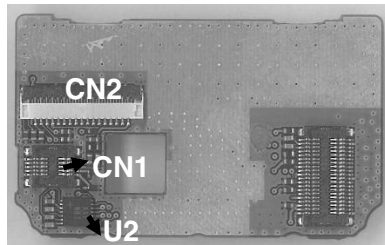
Reference	Description	Reference	Description
S1	Micro SD Slot	CN3	Battery Connector
J1	SIM Socket	MIC1	MIC
CN1,CN2	Main Connector	LD1,LD2	3 Color LED

3. TECHNICAL BRIEF

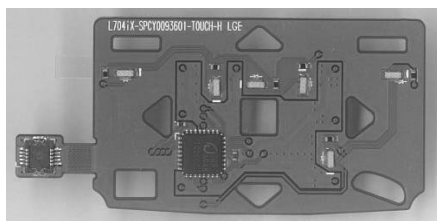
ETC



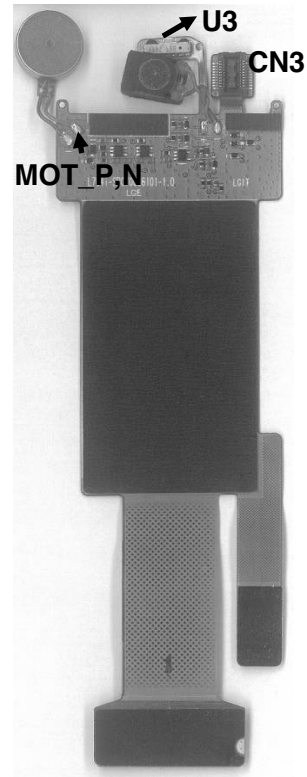
CAM FPCB TOP



Slide PCB Bottom



Touch FPCB Bottom

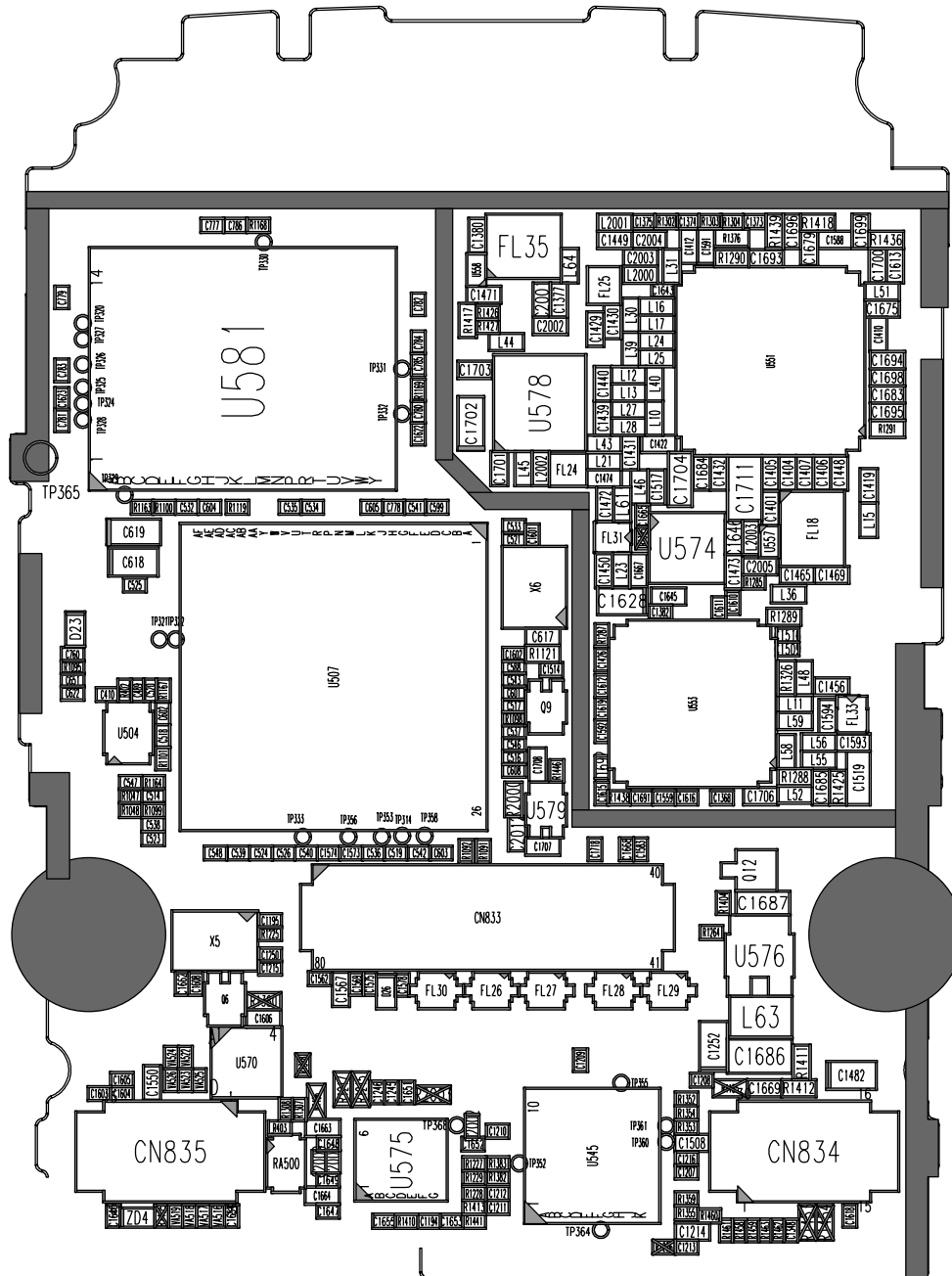


Slide FPCB Bottom

	Reference	Description
CAM FPCB	CN2	2M CAM Connector
	SPK_N , SPK_P	Speaker PAD
Slide PCB	CN2	LCD Connector
	U2	Backlight Charger Pump
	CN1	Touch FPCB Connector
Slide FPCB	U3	IrDA Module
	CN3	VGA CAM Connector
	MOT_P, MOT_N	Motor PAD

4. TROUBLE SHOOTING

4.1 RF Component



L704: MAIN-1.0 TOP



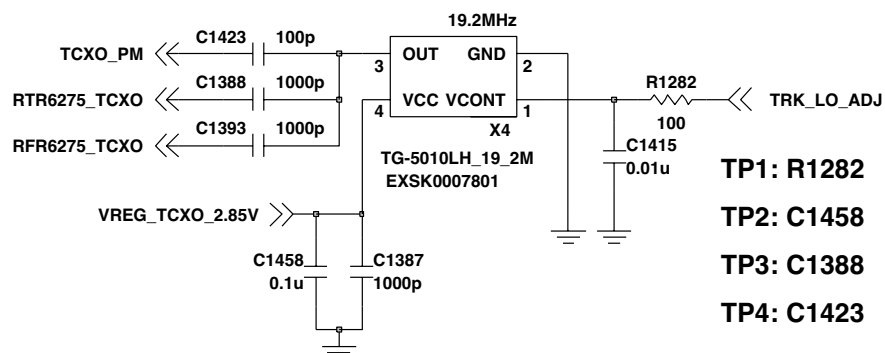
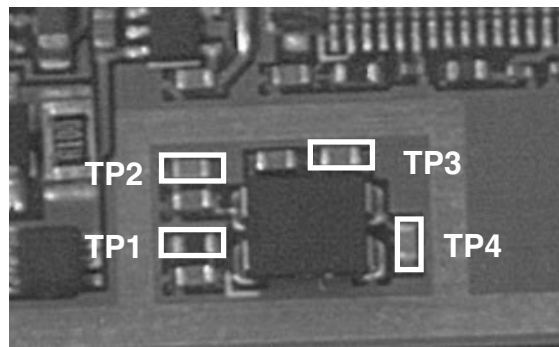
4. TROUBLE SHOOTING

Diagram	Ref. Name	Part Name	Function	Comment
Common	U507	MSM6280	Main Control	Main Chipset
	X2	EXXY0016601	Sleep Clock	32.768 kHz
	X6	EXXY0015501	USB Clock	48MHz
	U513	PM6650-2M	Power Control	Power Supply
	FL34	LMSP54MA-543	Switch	Band select
	U581	TYA000BC00DOGG	Memory	2G/1G
	SW1	KMS-507	Test Connector	Calibration, etc
	X4	T G-5010LH_19_2MHz	VCTCXO	19.2MHz
	U553	RFR6275	UMTS Receiver IC	RX
RF	U551	RTR6275	UMTS/GSM Transceiver	TRX
	FL25	SAFEB2G14FA0F00	UMTS2100 RX SAW filter	RX
	FL33	EFCH881MTDAA	UMTS800 RX SAW filter	RX
	FL18	EFSD835MF2S2	UMTS 800 Duplexer	TRX
	FL35	SAYZY1G95EA0B00	UMTS 2100 Duplexer	TRX
	U578	AWT6277R	UMTS 2100 PAM	TX
	U574	AWT6307R	UMTS 800 PAM	TX
	FL24	SAFEB1G95KA0F00	UMTS 2100 TX SAW filter	TX
	FL31	EFCH836MTDB1	UMTS 800 TX SAW filter	TX
	U569	TQM7M5003	GSM TX Dual PAM	TX
	FL32	EFCH897M TDB1	GSM900 TX SAW Filter	TX

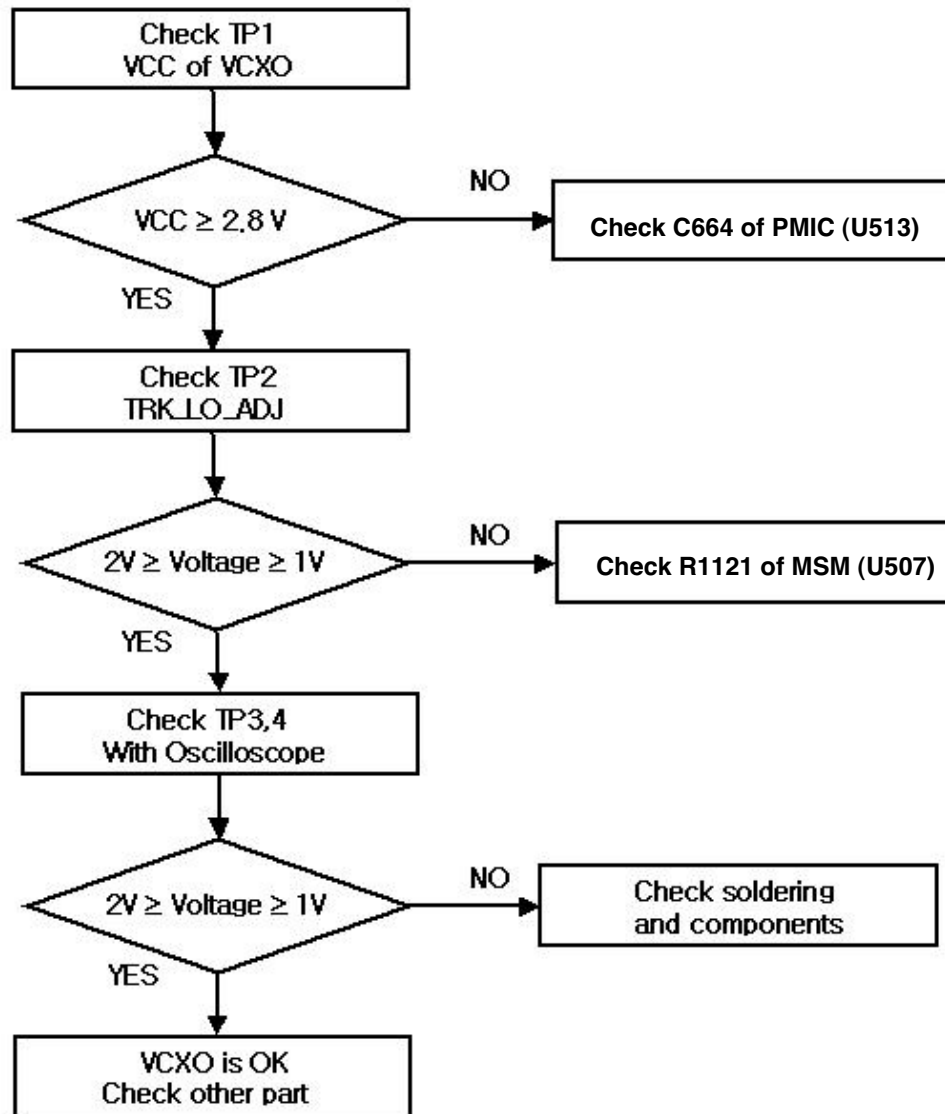
4. TROUBLE SHOOTING

4.2. Checking VCXO Block

The reference frequency (19.2MHz) from X100 (TCXO) is used in UMTS TX part, GSM part and BB part.

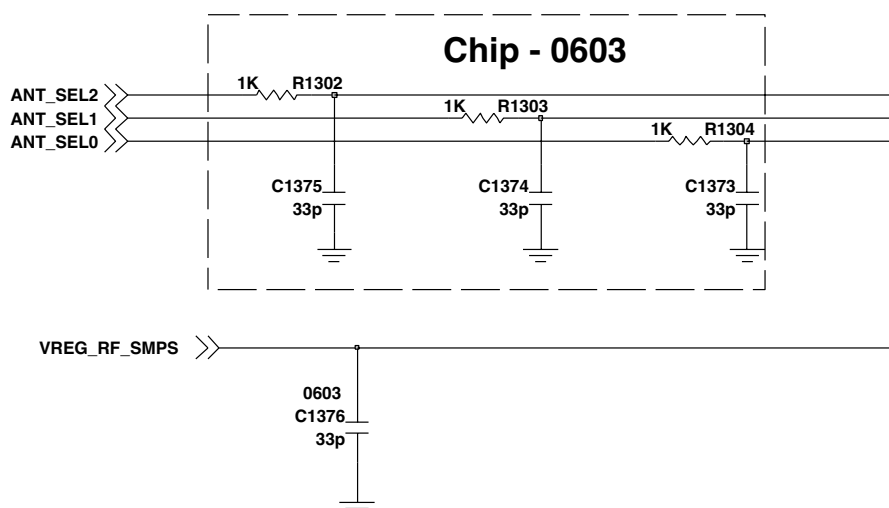
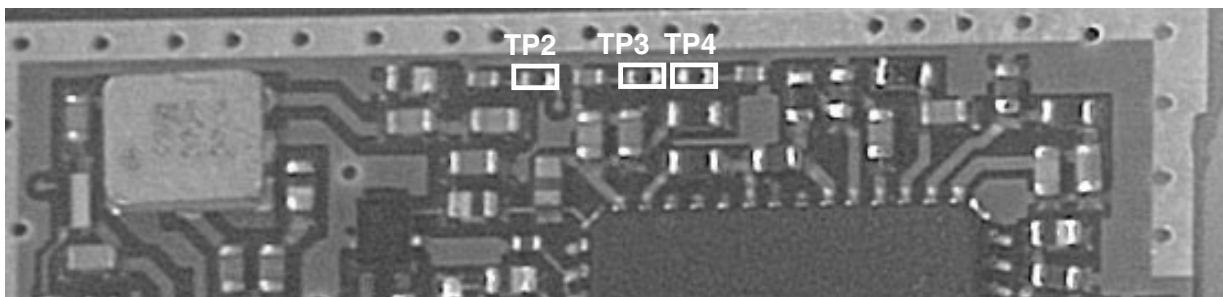
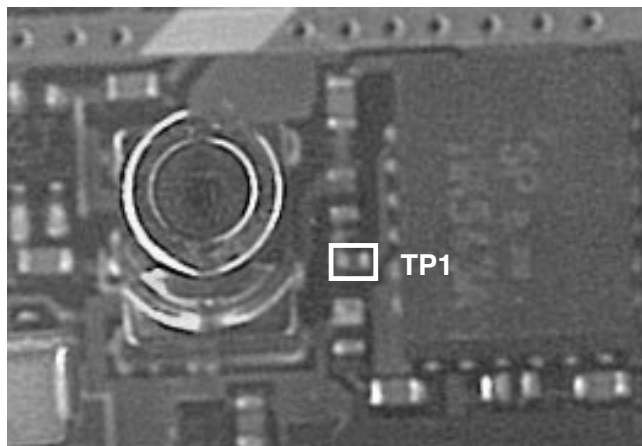


4. TROUBLE SHOOTING



4. TROUBLE SHOOTING

4.3. Checking Ant. SW Module Block



4. TROUBLE SHOOTING

CONTROL LOGIC

Mode	Vc1	Vc2	Vc3	Vdd
GSM900 Tx	H	H	L	H
GSM1800/GSM1900 Tx	H	L	L	H
GSM900 Rx	L	L	H	H
GSM1800 Rx	L	H	H	H
GSM1900 Rx	L	H	L	H
UMTS 1	H	L	H	H
UMTS 2	H	H	H	H

Voltage range of Vc1, Vc2, Vc3

H: 1.5-3.0V

L: 0.0-0.2V

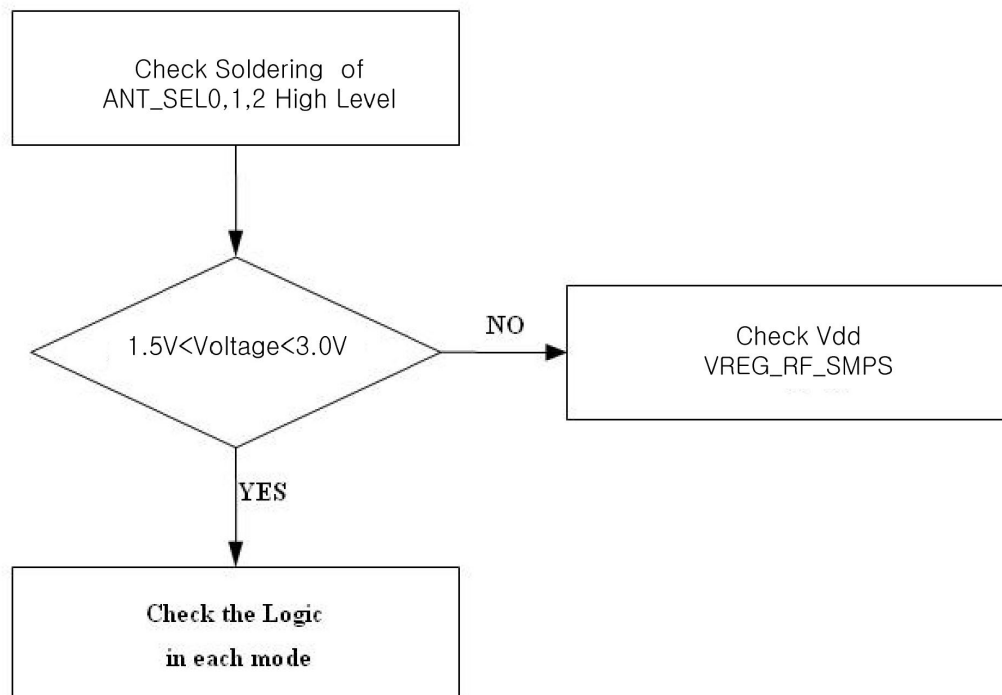
Voltage range of Vdd

2.5-3.0V

4. TROUBLE SHOOTING

Logic Table of the Front End Module

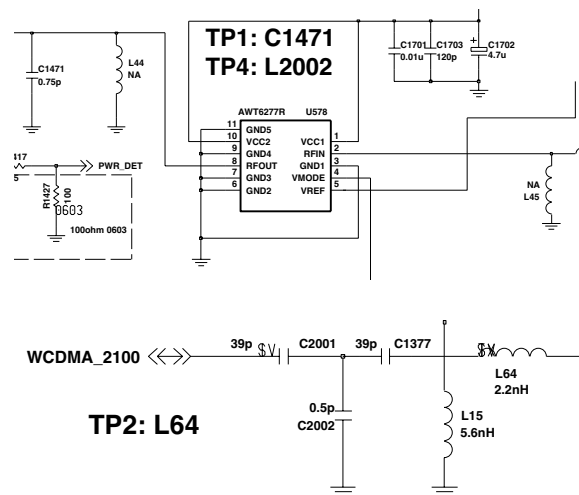
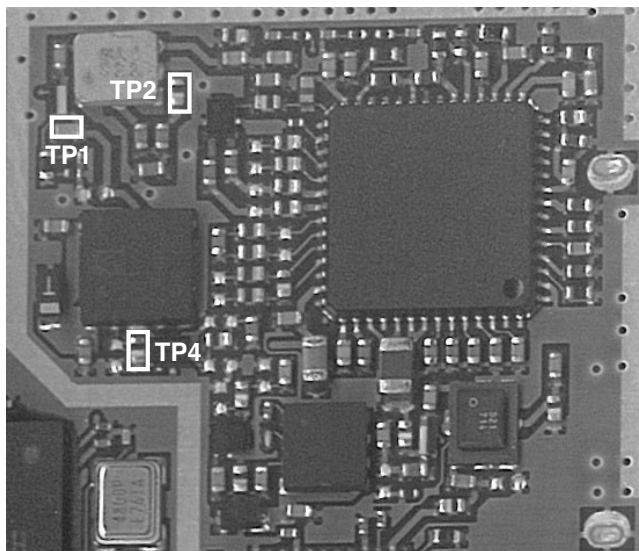
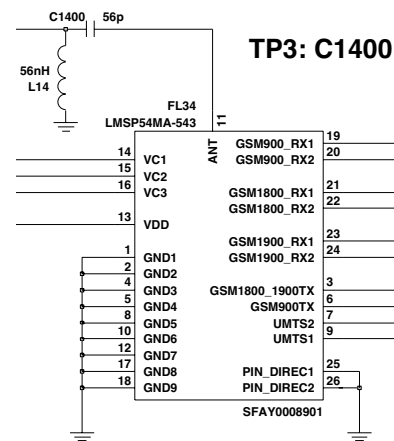
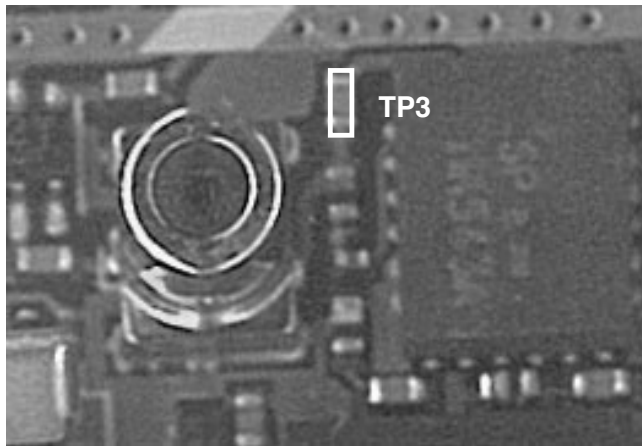
Checking Switch Block power source



4. TROUBLE SHOOTING

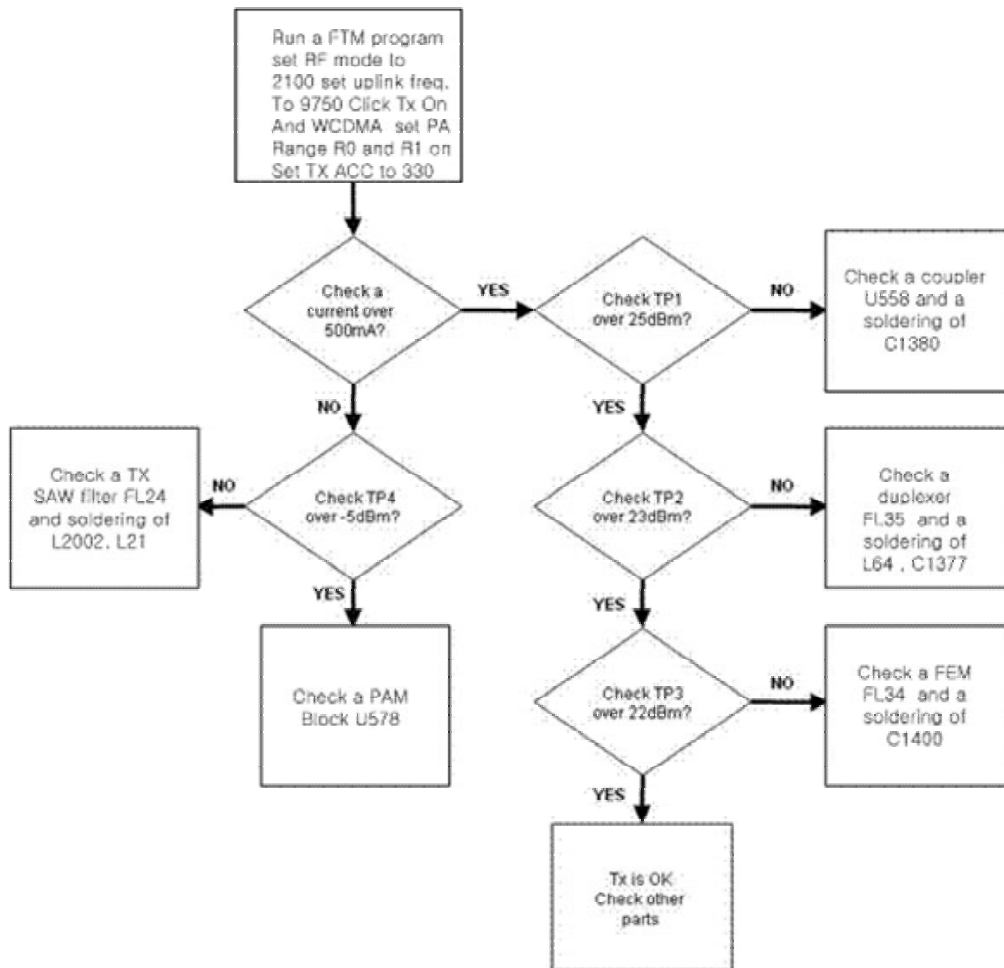
4.4. Checking UMTS Block

4.4.1. Checking TX POWER of UMTS2100MHz

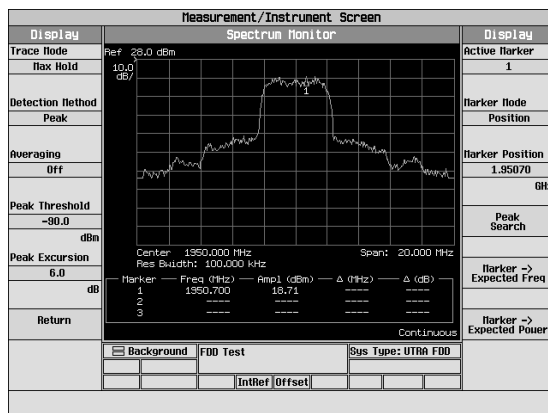
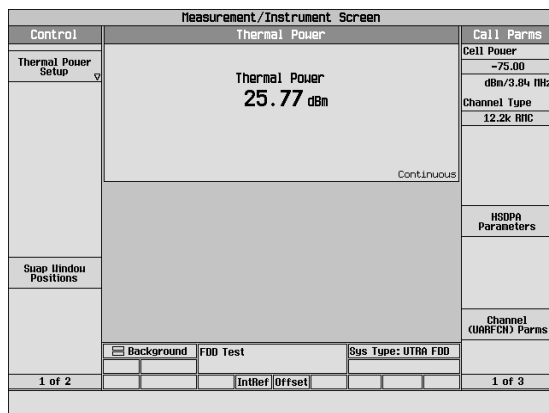


4. TROUBLE SHOOTING

For testing, Max power of UMTS2100MHz is needed.



Measured value and spectrum of TP1



4. TROUBLE SHOOTING

Measured value and spectrum of TP2

Measurement/Instrument Screen				
Control	Thermal Power			Call Params
Thermal Power Setup	Thermal Power 23.66 dBm			Cell Power
				-75.00
				dBm/3.84 MHz
				Channel Type
				12.2k RMC
				Continuous
				HSDPA Parameters
Swap Window Positions				Channel (UARFCN) Params
	Background	FDD Test	Sys Type: UTRA FDD	
1 of 2		Interfer Offset		1 of 3

Measurement/Instrument Screen				
Display	Spectrum Monitor			Display
Trace Node	Ref: 28.0 dBm 10.0 dB			Active Marker
Max Hold				1
Detection Method	Peak			Marker Node
Averaging				Position
Off				Marker Position
Peak Threshold	-90.0			1.94880
dBm				GHz
Peak Excursion	6.0			Peak Search
dB				Marker -> Expected Freq
Return	Continuous			Marker -> Expected Power
	Background	FDD Test	Sys Type: UTRA FDD	
		Interfer Offset		

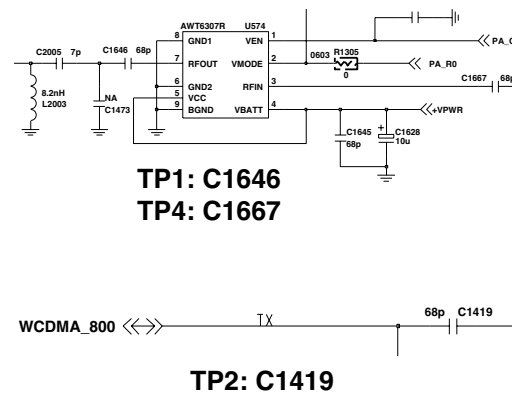
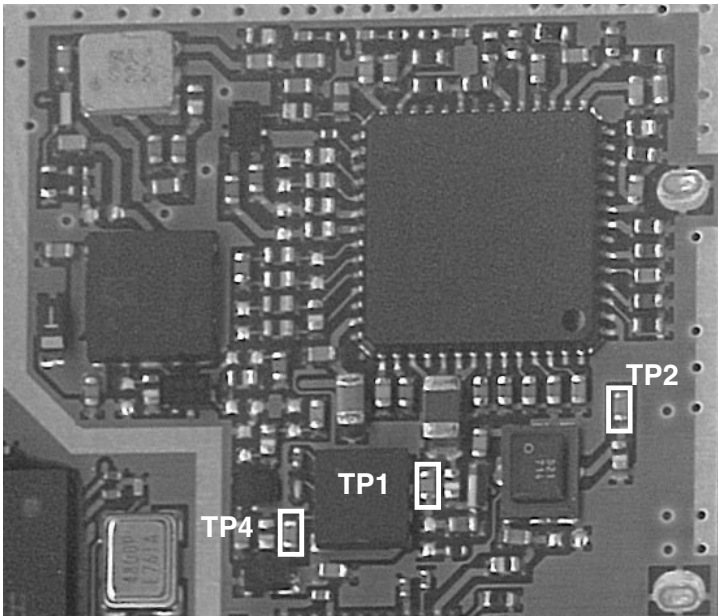
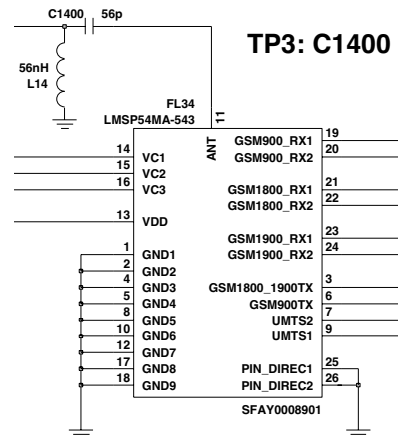
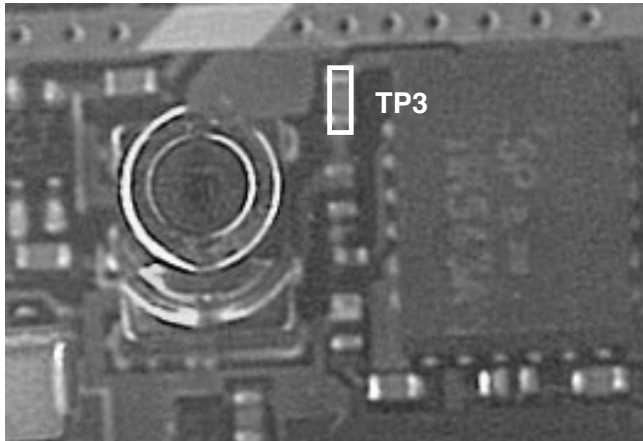
Measured value and spectrum of TP3

Measurement/Instrument Screen				
Control	Thermal Power			Call Params
Thermal Power Setup	Thermal Power 22.34 dBm			Cell Power
				-75.00
				dBm/3.84 MHz
				Channel Type
				12.2k RMC
				Continuous
				HSDPA Parameters
Swap Window Positions				Channel (UARFCN) Params
	Background	FDD Test	Sys Type: UTRA FDD	
1 of 2		Interfer Offset		1 of 3

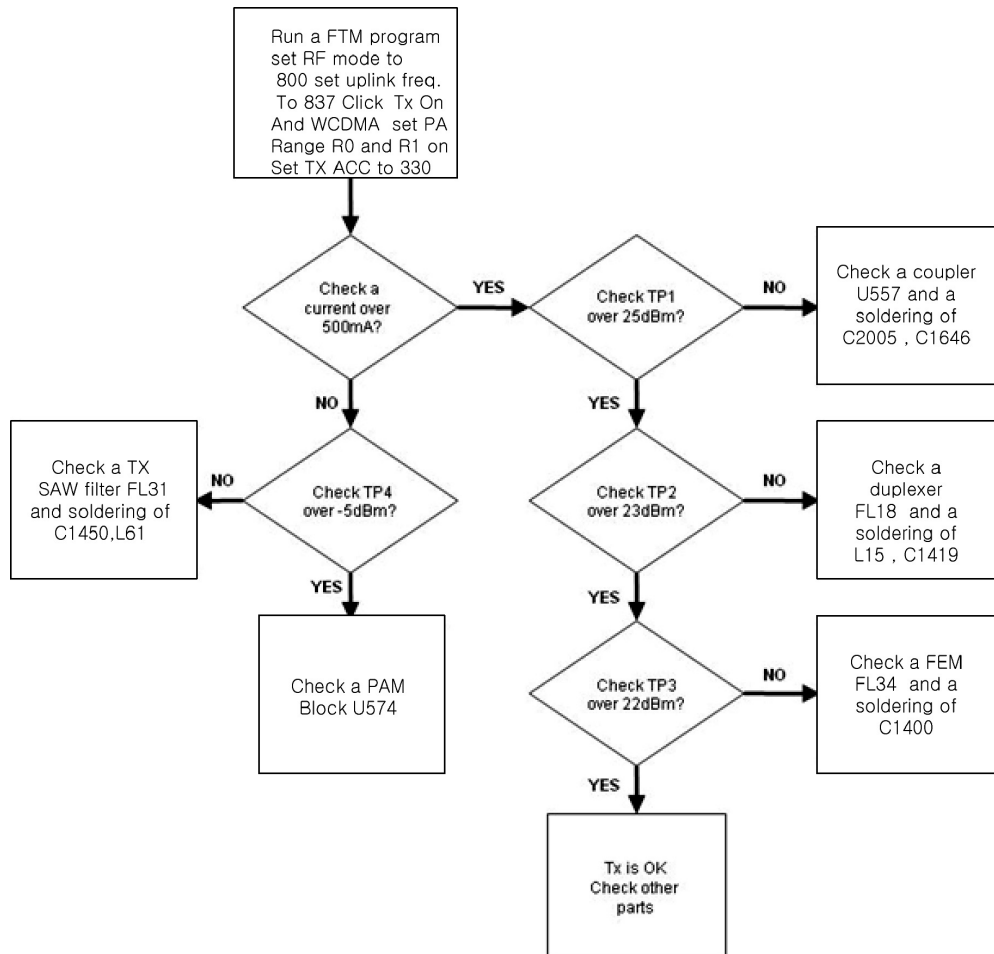
Measurement/Instrument Screen				
Display	Spectrum Monitor			Display
Trace Node	Ref: 28.0 dBm 10.0 dB			Active Marker
Max Hold				1
Detection Method	Peak			Marker Node
Averaging				Position
Off				Marker Position
Peak Threshold	-90.0			1.94810
dBm				GHz
Peak Excursion	6.0			Peak Search
dB				Marker -> Expected Freq
Return	Continuous			Marker -> Expected Power
	Background	FDD Test	Sys Type: UTRA FDD	
		Interfer Offset		

4. TROUBLE SHOOTING

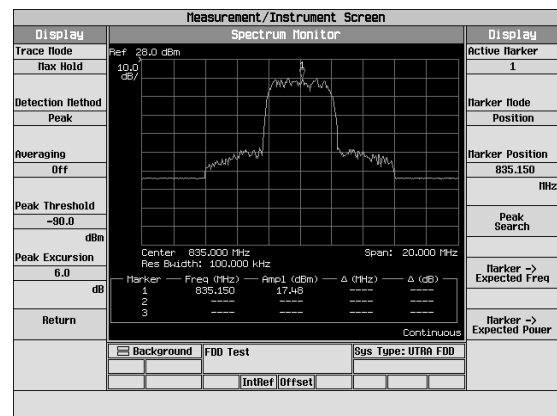
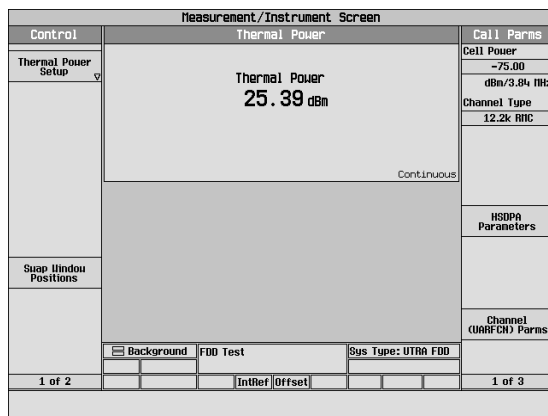
4.4.2. Checking TX POWER of UMTS 800MHz



4. TROUBLE SHOOTING



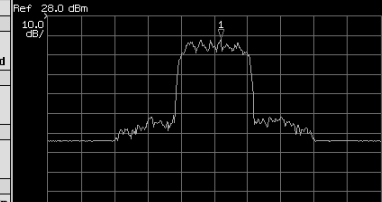
Measured value and spectrum of TP1



4. TROUBLE SHOOTING

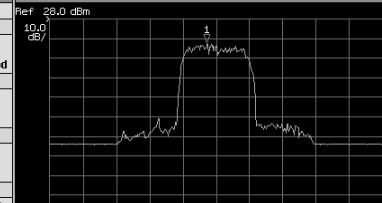
Measured value and spectrum of TP2

Measurement/Instrument Screen				
Control	Thermal Power			Call Params
Thermal Power Setup ▾	Thermal Power 23.43 dBm			Cell Power -75.00 dBm/3.84 MHz
				Channel Type 12.2k RMC
	Continuous			
				HSDPA Parameters
Swap Window Positions				Channel (UARFCN) Params
	Background	FDD Test	Sys Type: UTRA FDD	
1 of 2		IntRef	Offset	1 of 3

Measurement/Instrument Screen				
Display	Spectrum Monitor			Display
Trace Mode				Active Marker 1
Max Hold				Marker Node Position
Detection Method	Peak			Marker Position 835.400 MHz
Averaging	Off			Peak Search
Peak Threshold	-90.0 dBm			
Peak Excursion	6.0 dB			Marker -> Expected Freq
Return	Continuous			Marker -> Expected Power
	Background	FDD Test	Sys Type: UTRA FDD	
		IntRef	Offset	

Measured value and spectrum of TP3

Measurement/Instrument Screen				
Control	Thermal Power			Call Params
Thermal Power Setup ▾	Thermal Power 22.55 dBm			Cell Power -75.00 dBm/3.84 MHz
				Channel Type 12.2k RMC
	Continuous			
				HSDPA Parameters
Swap Window Positions				Channel (UARFCN) Params
	Background	FDD Test	Sys Type: UTRA FDD	
1 of 2		IntRef	Offset	1 of 3

Measurement/Instrument Screen				
Display	Spectrum Monitor			Display
Trace Mode				Active Marker 1
Max Hold				Marker Node Position
Detection Method	Peak			Marker Position 834.400 MHz
Averaging	Off			Peak Search
Peak Threshold	-90.0 dBm			
Peak Excursion	6.0 dB			Marker -> Expected Freq
Return	Continuous			Marker -> Expected Power
	Background	FDD Test	Sys Type: UTRA FDD	
		IntRef	Offset	

4. TROUBLE SHOOTING

4.4.3. Checking UMTS PAM Control Block

- PAM control signal

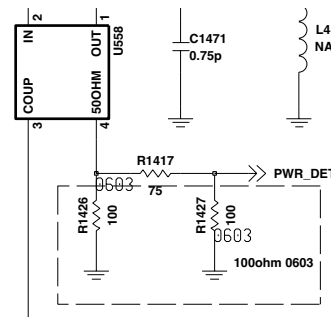
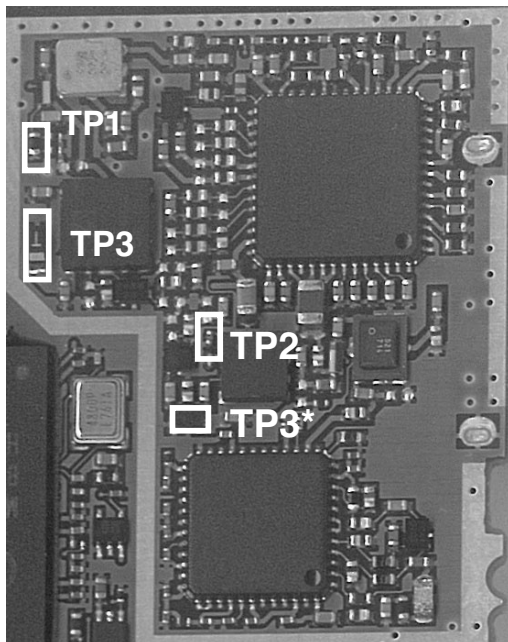
TP1. PWR_DET : UMTS Tx Power Detected value.

TP2. PA_ON1: UMTS800 PAM enable (about 2.6V)

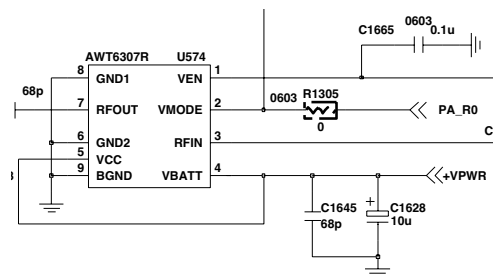
TP3, TP3*. +VPWR : UMTS PAM Main Voltage ($3V < +VPWR < 4.2V$)

TP*:UMTS 800

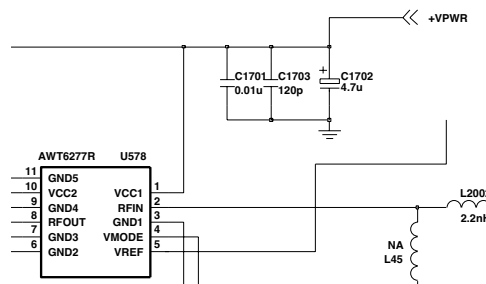
TP: UMTS 2100



TP1: R1417



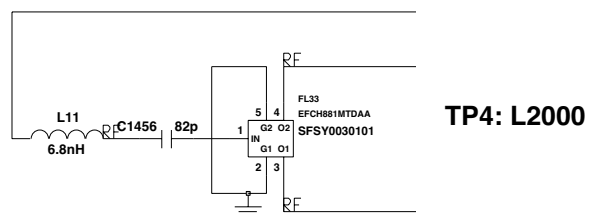
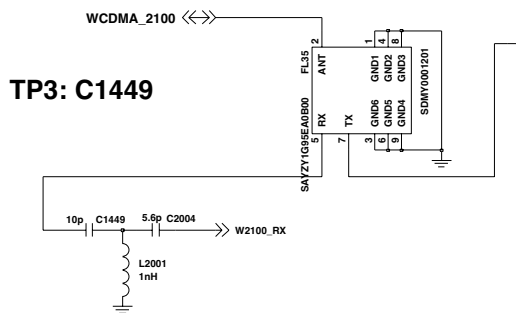
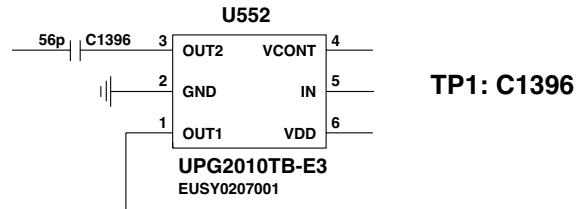
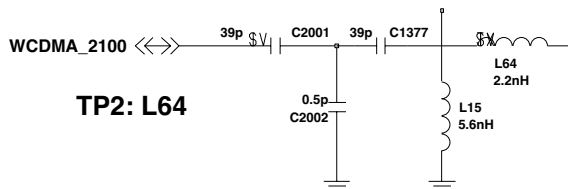
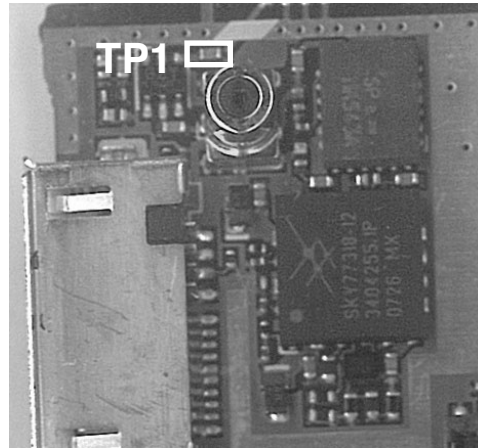
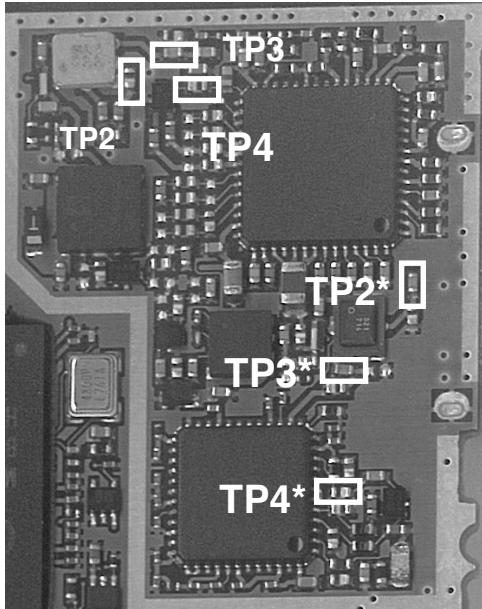
**TP2: C1665
TP3*: C1628**



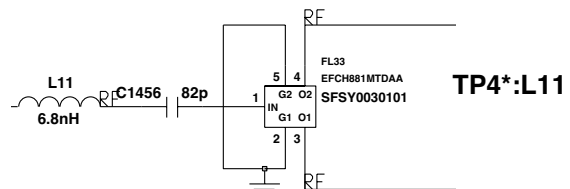
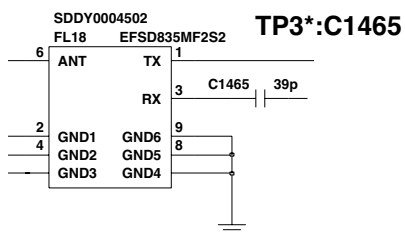
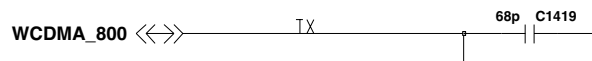
TP3: C1702

4. TROUBLE SHOOTING

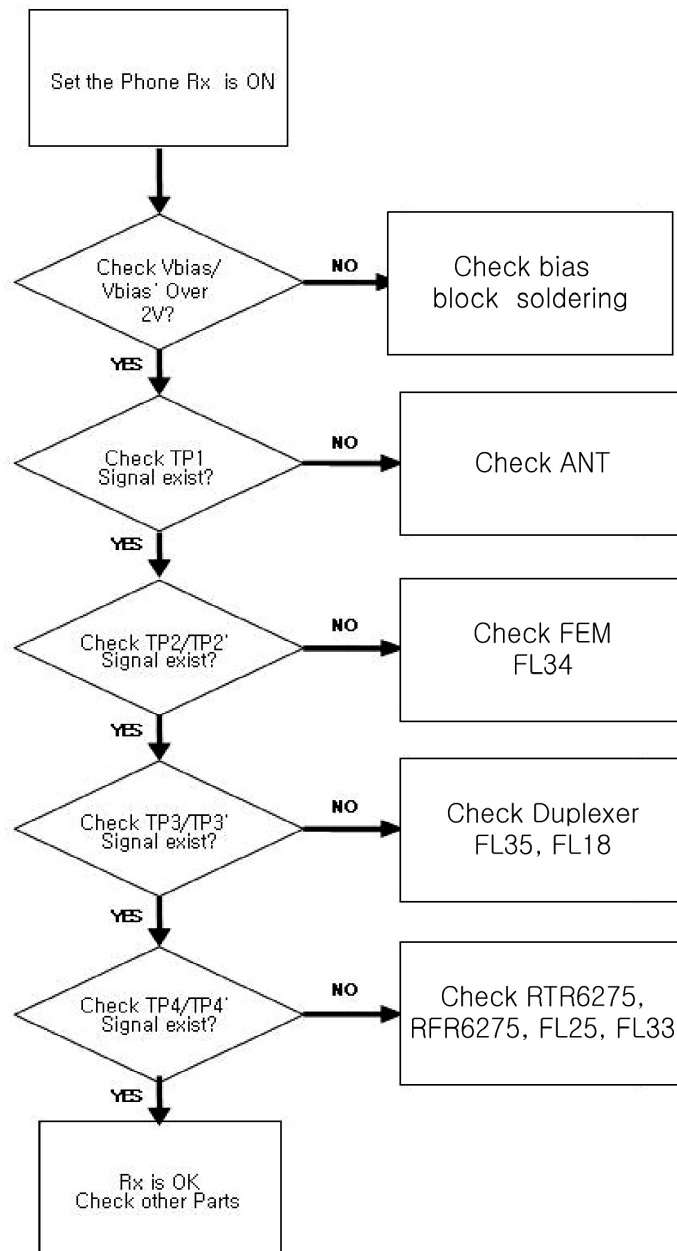
4.4.4. Checking RF Rx Level



TP2*: C1419



4. TROUBLE SHOOTING

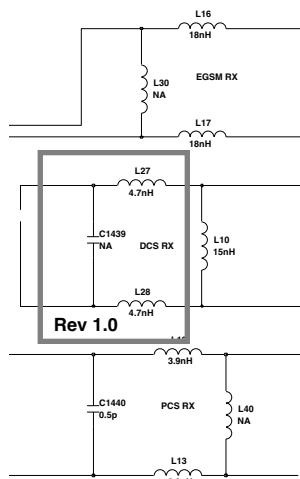
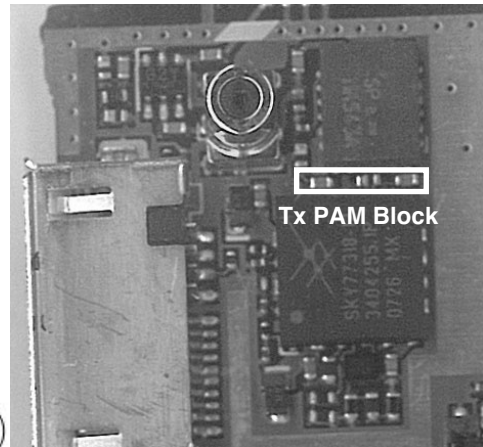
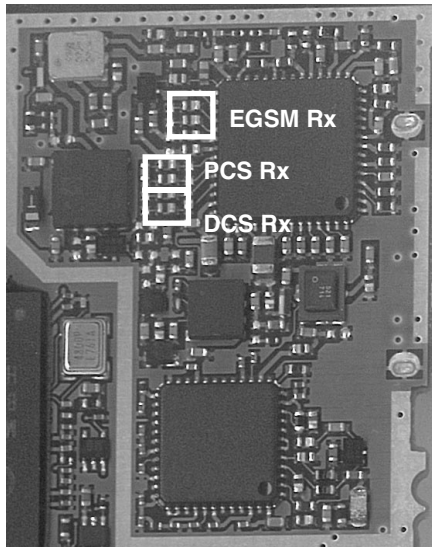


※ TP* :UMTS 800 Rx PATH

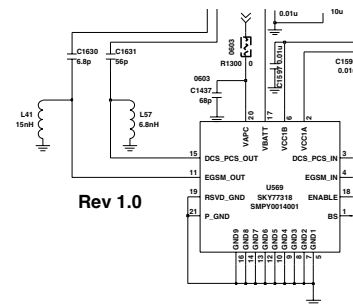
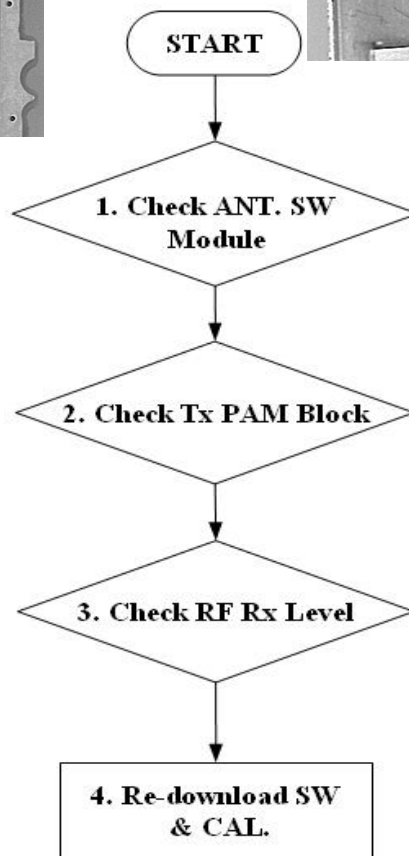
TP: UMTS 2100 Rx PATH

4. TROUBLE SHOOTING

4.5. Checking GSM Block



GSM Rx block



GSM Tx block

4.5.1. Checking PAM Block

TP1. GSM_PA_RAMP : Power Amp Gain Control. typically, $0.2V < V_{ramp} < 1.6V$

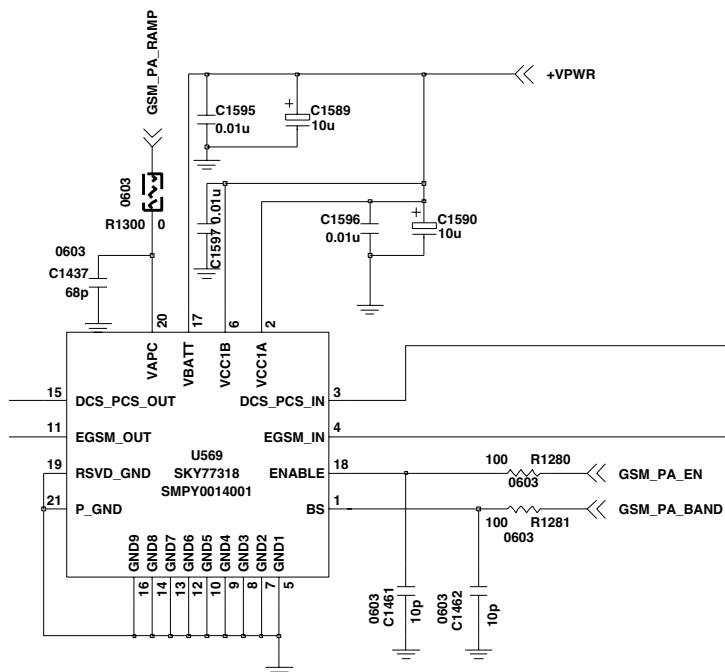
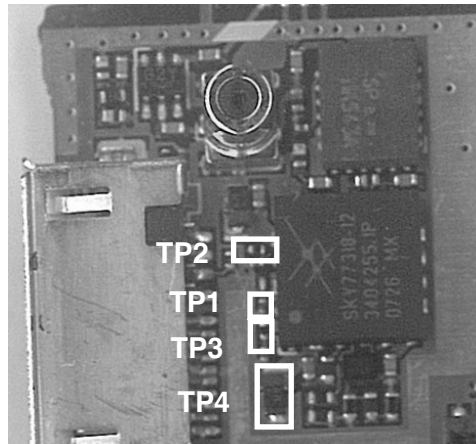
TP2. GSM_PA_EN : Power Amp Enable

(Power ON : higher than 1.25V , Power OFF : lower than 0.4V)

TP3. GSM_PA_BAND : Power Amp Band Selection Control

(GSM Mode : $-0.2V < VBS < 0.4V$, DCS/PCS Mode : $1.25V < VBS < 3.0V$)

TP4. +VPWR : PAM Supply Voltage Vcc higher than 3.0V



TP1: C1437

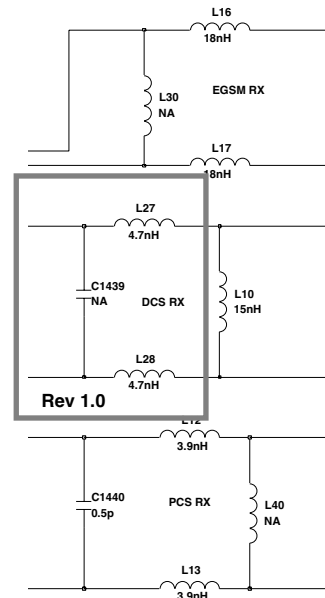
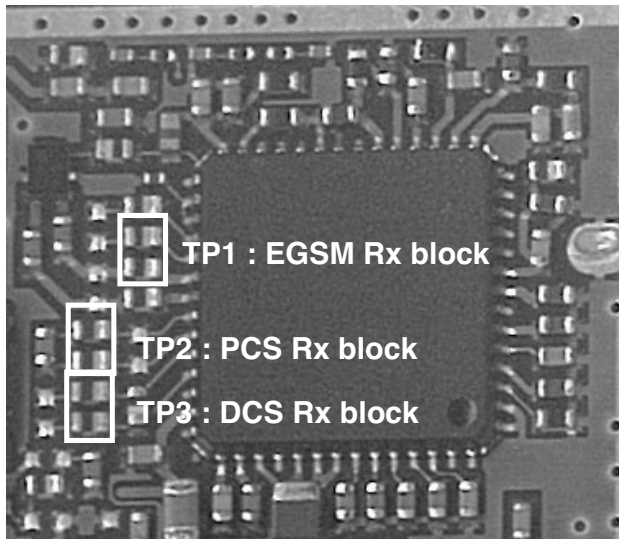
TP2: R1280

TP3: R1281

TP4: C1590

4. TROUBLE SHOOTING

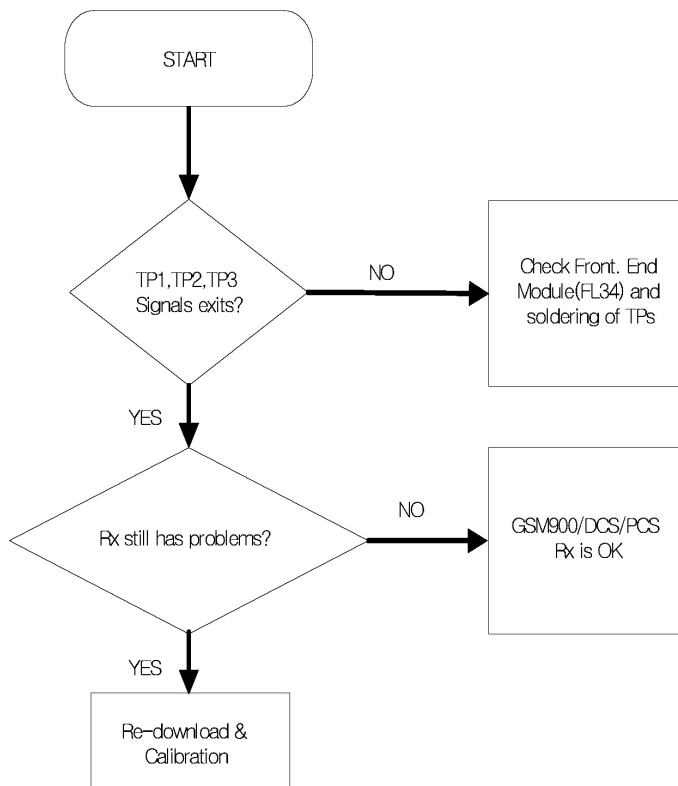
4.5.2. Checking RF Rx Block



TP1: L16,L17 (EGSM Rx block)

TP2: L12,L13 (PCS Rx block)

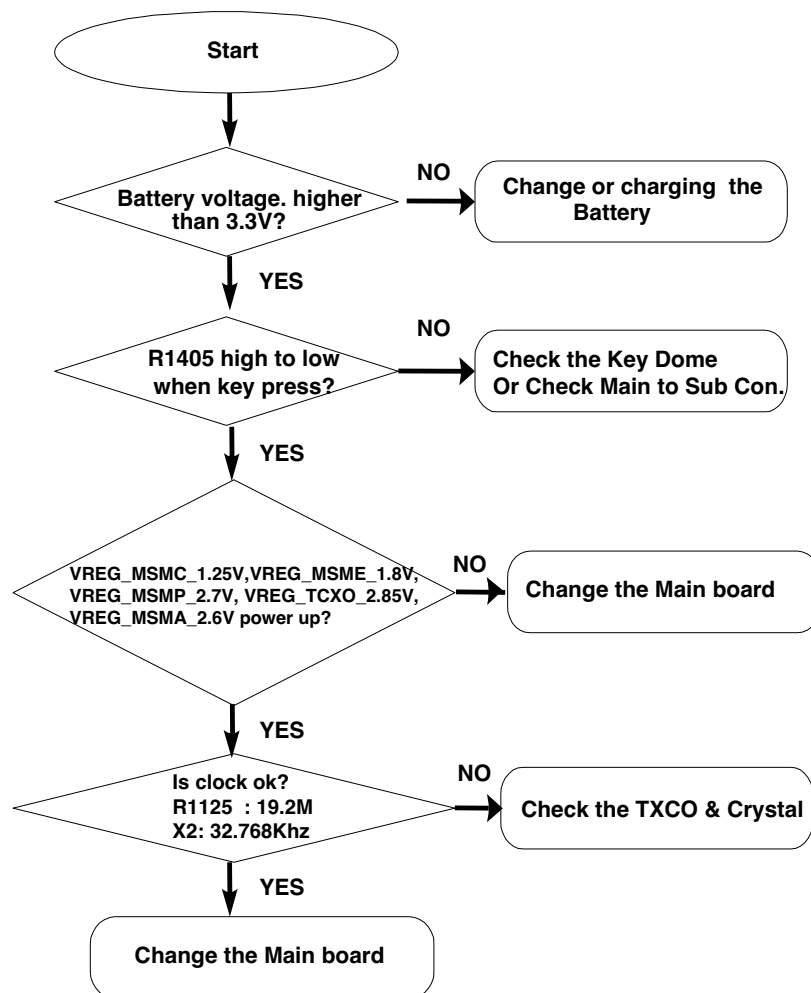
TP3: L27,L28 (DCS Rx block)



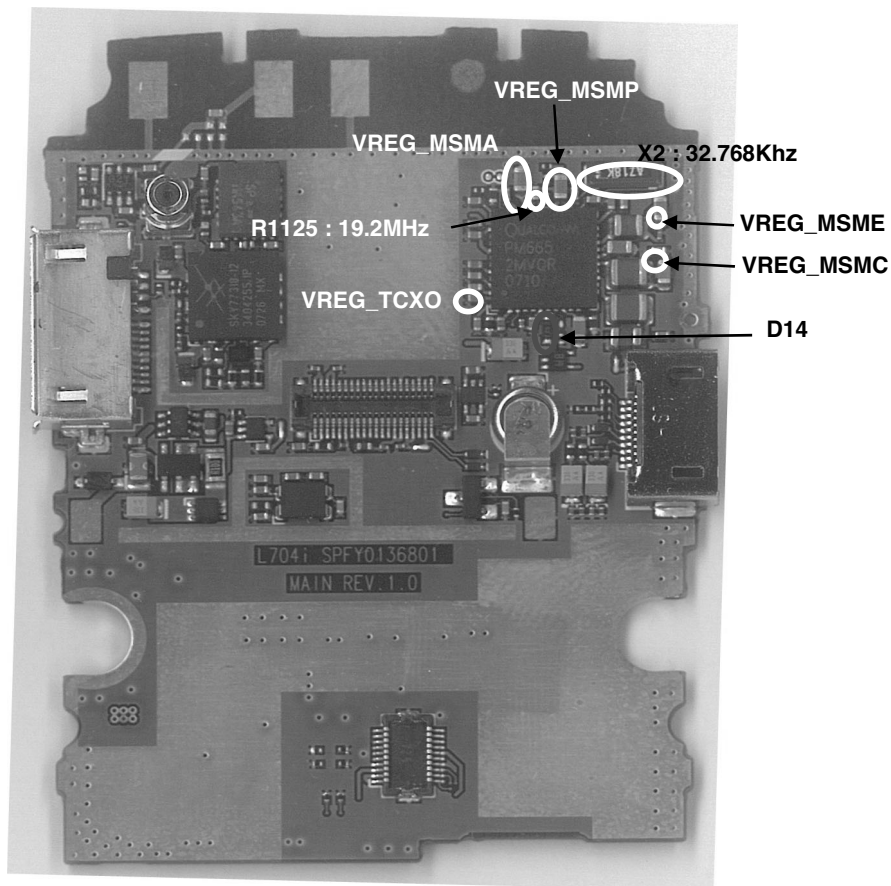
4.6. Power ON Troubleshooting

Power On sequence of L704i is :

PWR key press(Sub PCB) → KEY_ON_SW_N go to low(R1405),PM6650 KPDPWR_N pin(24) → PM6650 Power Up → VREG_MSMC_1.25V(C695), VREG_MSME_1.8V(C696), VREG_MSMP_2.7V(C701), VREG_MSMA_2.6V(C697), VREG_TCXO_2.85V(C664) power up and system reset assert to MSM → Phone booting and PS_HOLD(D14) assert to PMIC



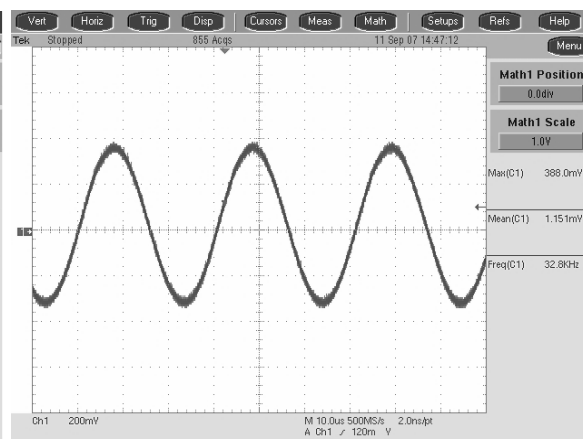
4. TROUBLE SHOOTING



Main board, Bottom



R1125 : 19.2MHz



X2 : 32.768Khz



4. TROUBLE SHOOTING

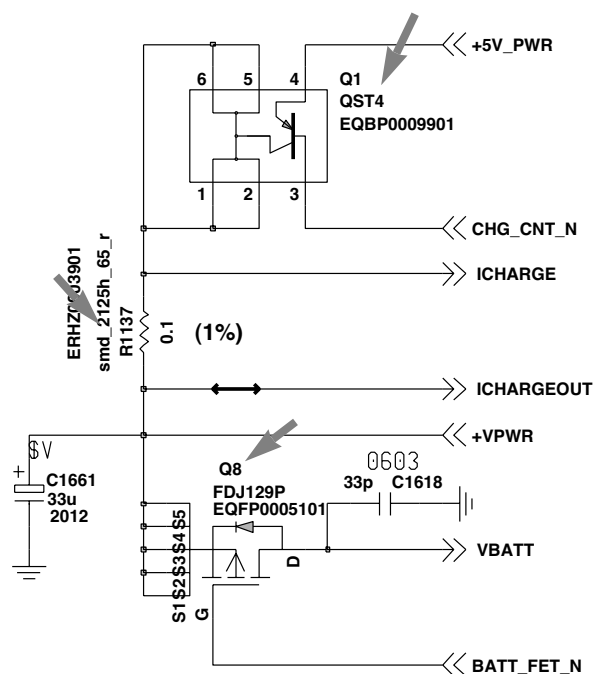
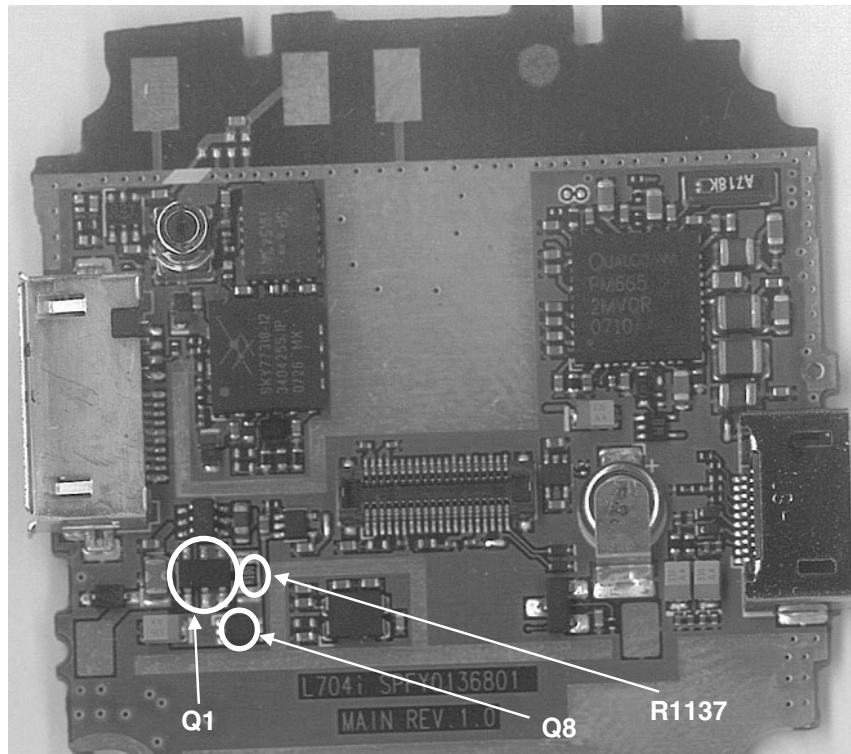
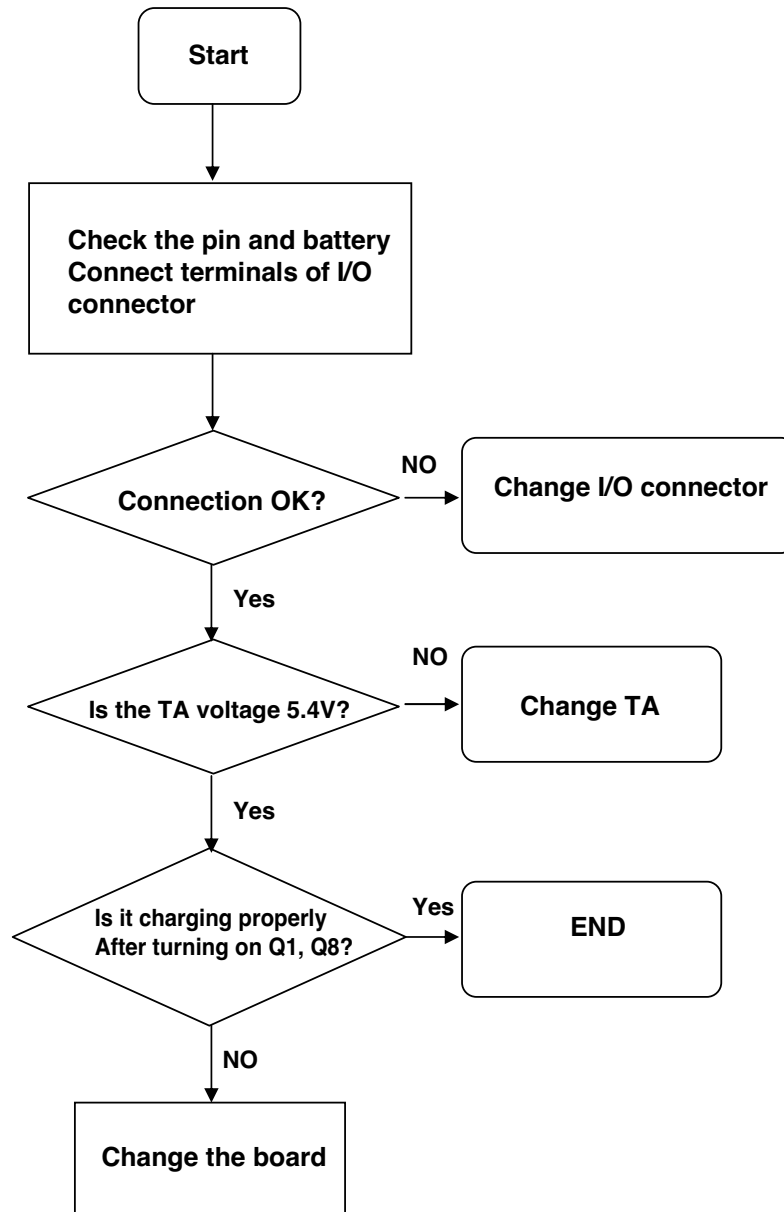


Figure . Charging part schematic

4. TROUBLE SHOOTING

4. BB Trouble Shooting

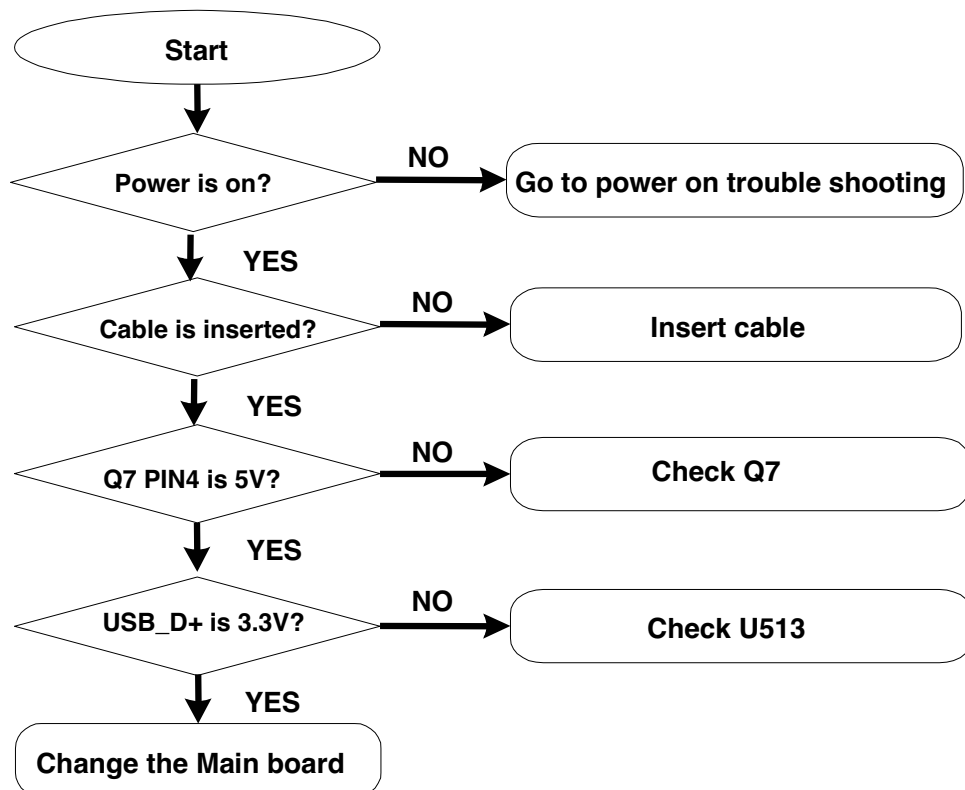
Troubleshooting Flow



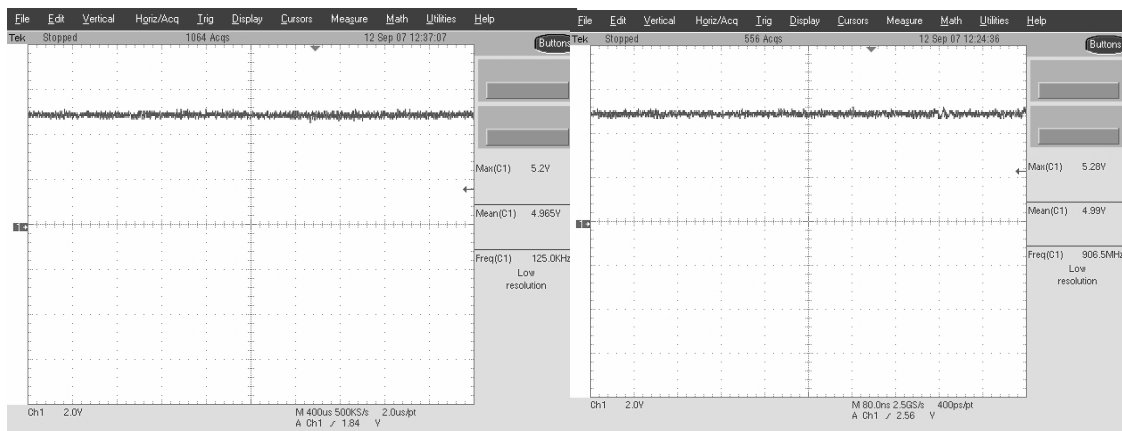
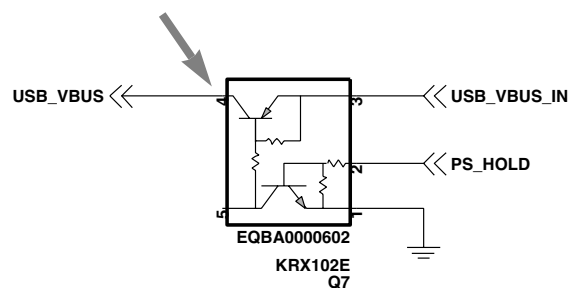
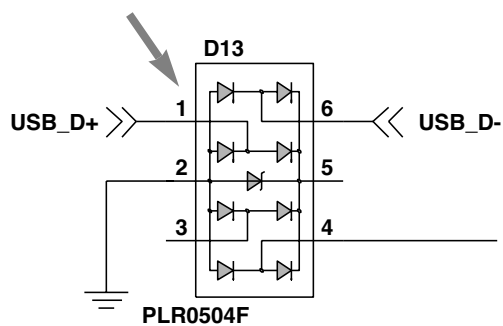
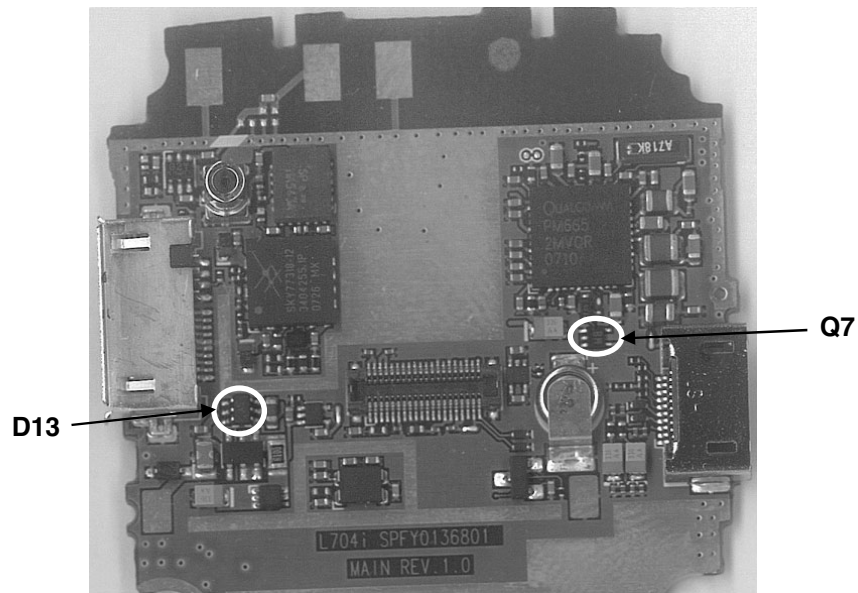
4.8. USB Troubleshooting

USB Initial sequence of L704i is :

USB connected to L704i power on → USB_VBUS(Q7 PIN4) go to 5V → USB_D+ go to 3.3V → USB_VP and USB_VN is triggered → USB work.



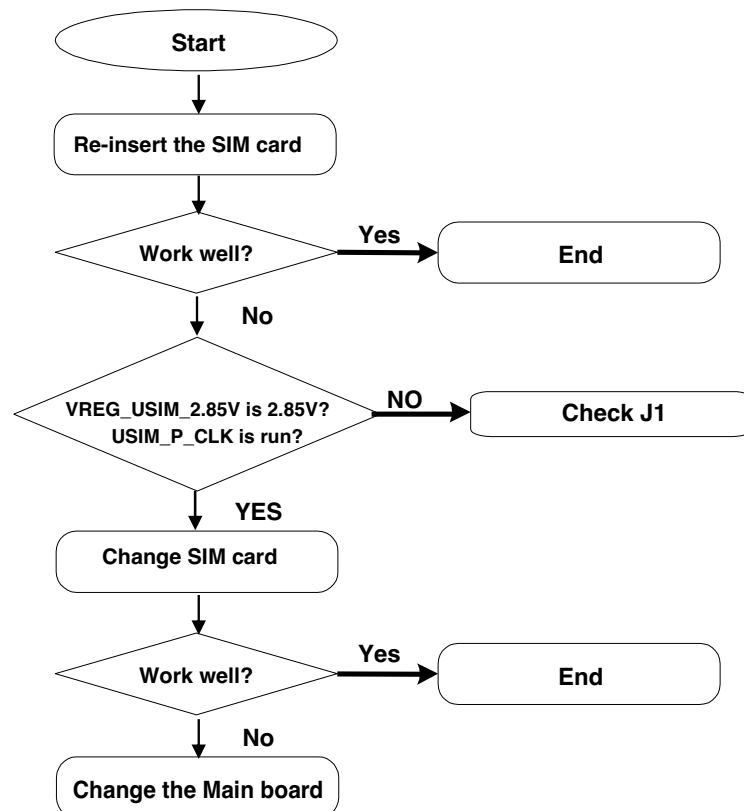
4. TROUBLE SHOOTING



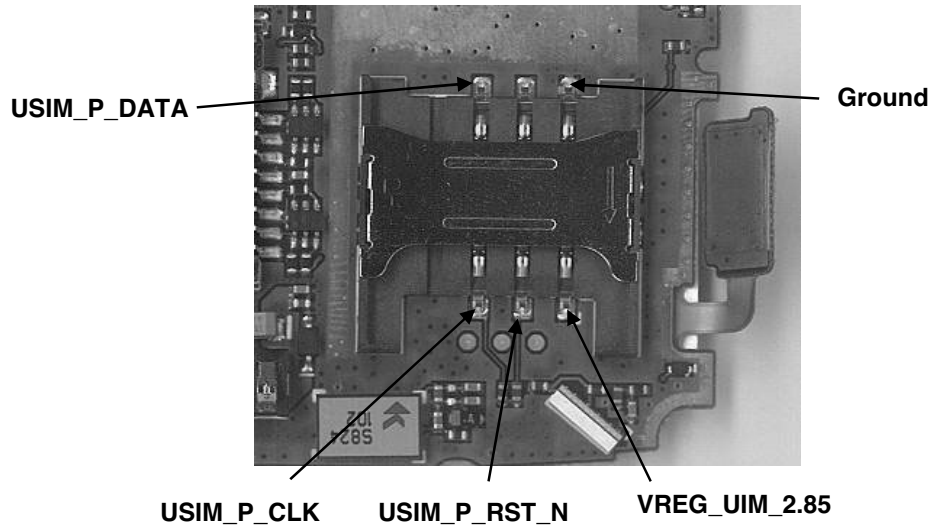
4.9 SIM Detect Troubleshooting

USIM Initial sequence of L704i is :

USIM_CLK,USIM_RST,USIM_DATA triggered → VREG_USIM_2.85V go to 2.85V → USIM IF work

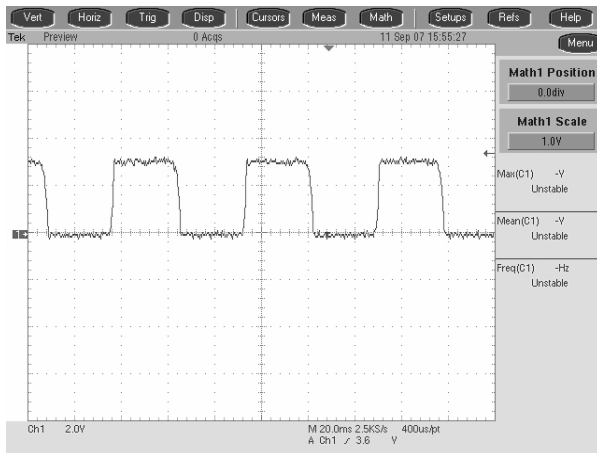
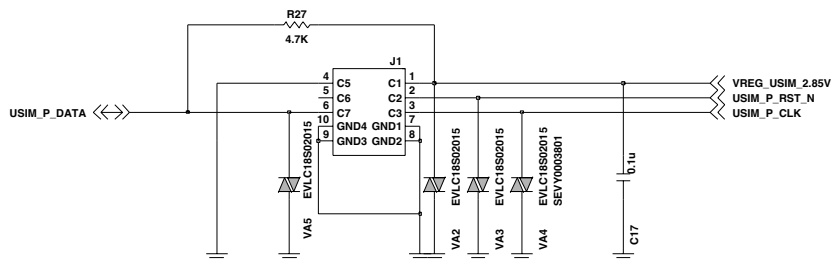


4. TROUBLE SHOOTING

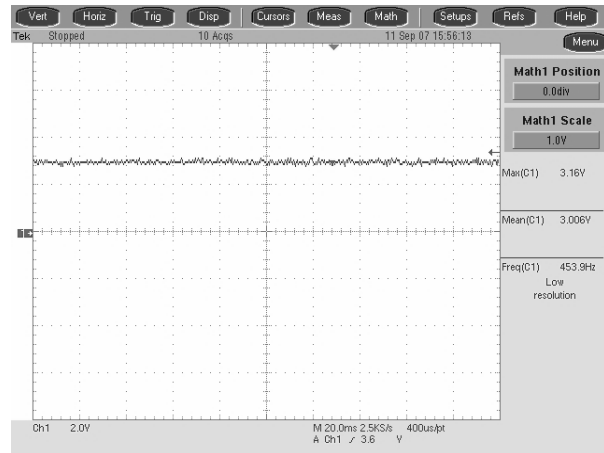


< SIM - 1.8T >

< SIM - 1.8T >



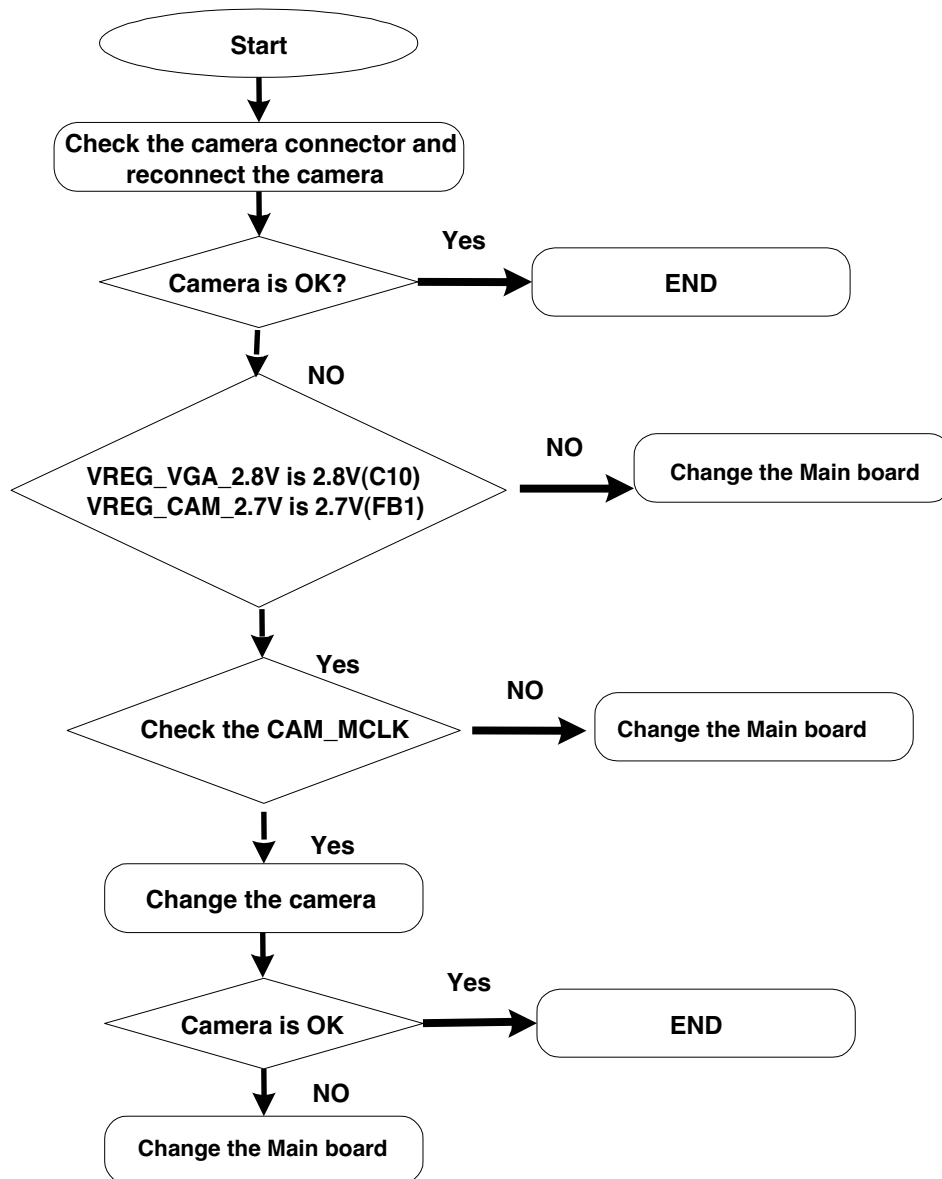
USIM_P_CLK

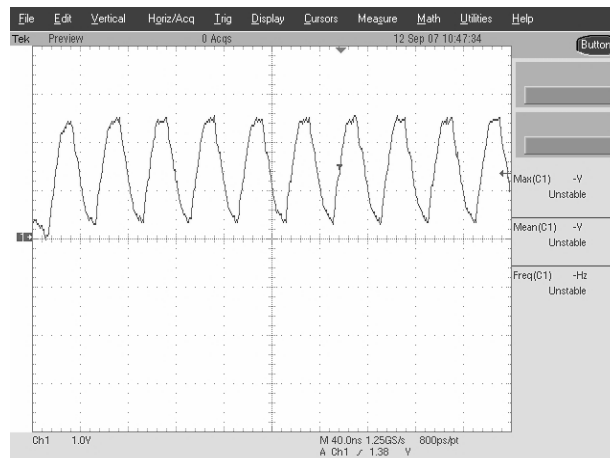


VREG_USIM_2.85V

4.9.1 VGA Camera Troubleshooting

VGA Camera control signals are generated by MSM6280.

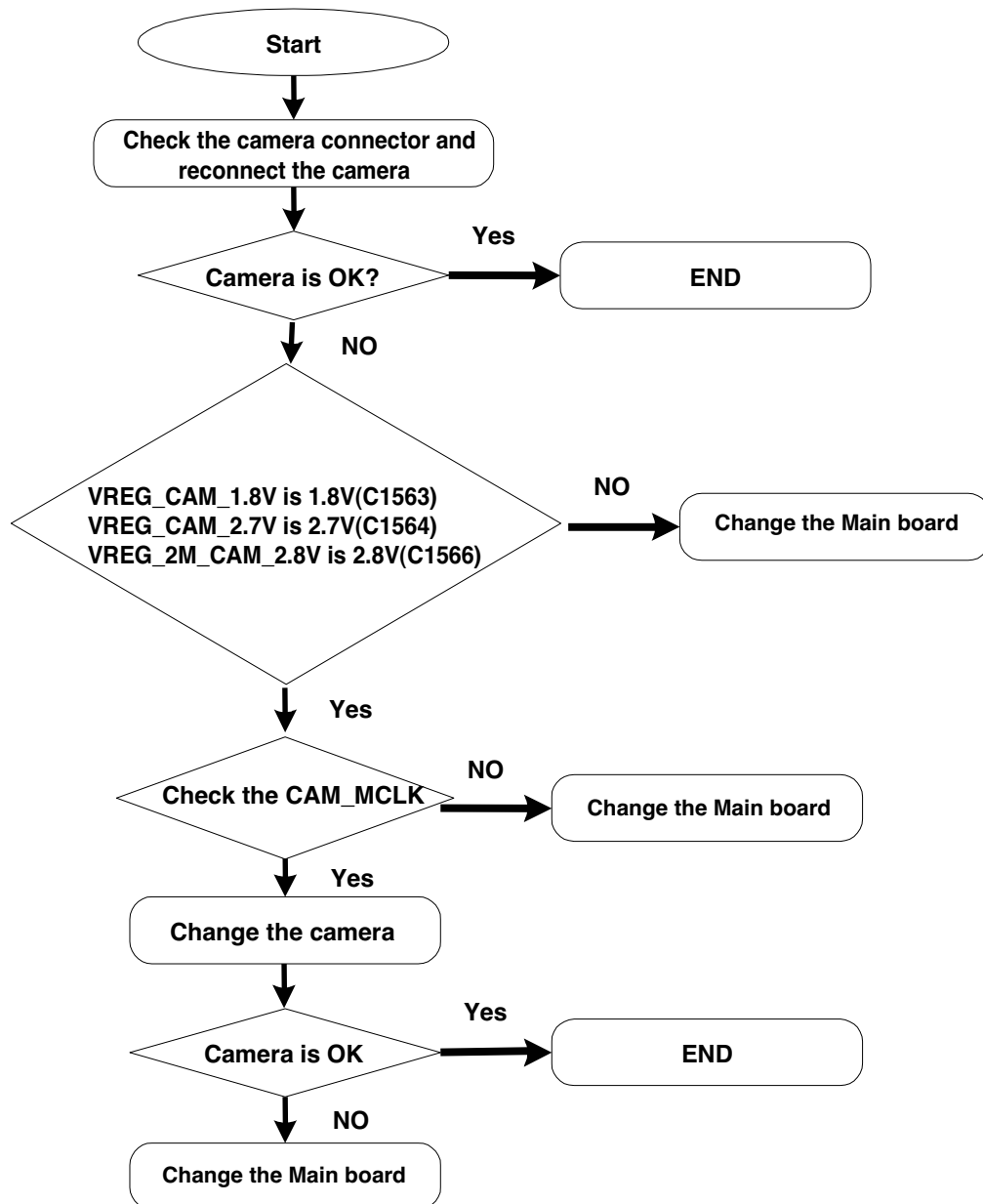




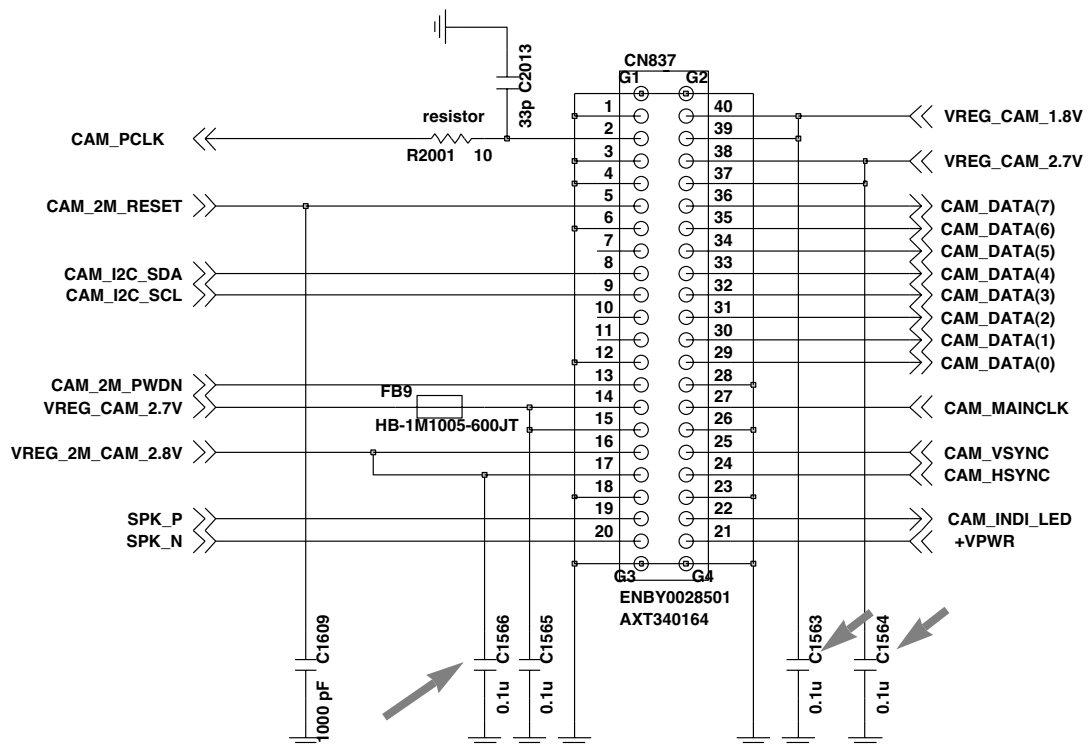
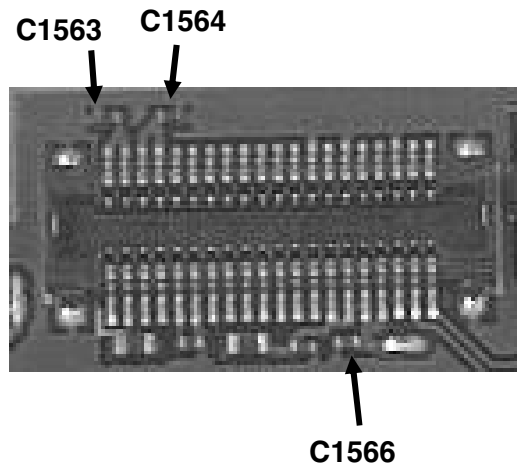
Copyright © 2007 LG Electronics. Inc. All right reserved.
Only for training and service purposes

4.9.2 2 Mega Camera Troubleshooting

2 Mega Camera control signals are generated by MSM6280.



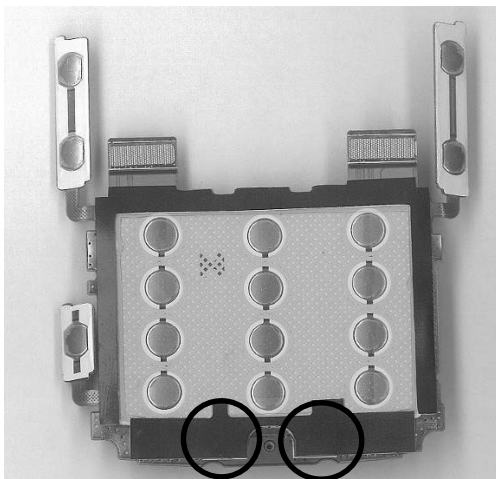
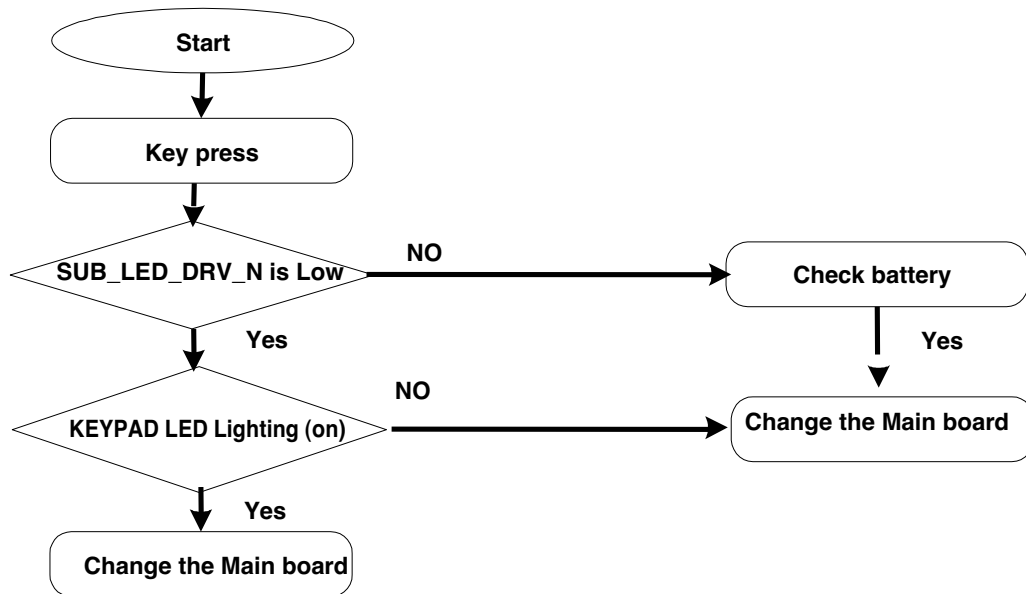
4. TROUBLE SHOOTING



4.10 Keypad Backlight Troubleshooting

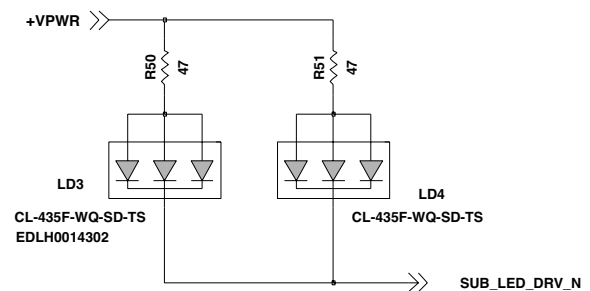
Key Pad LED Light is on as below :

Key pressing → SUB_LED_DRV_N is Low → KEYPAD LED Lighting (on)



KEYPAD LED position

KEYPAD LIGHTING

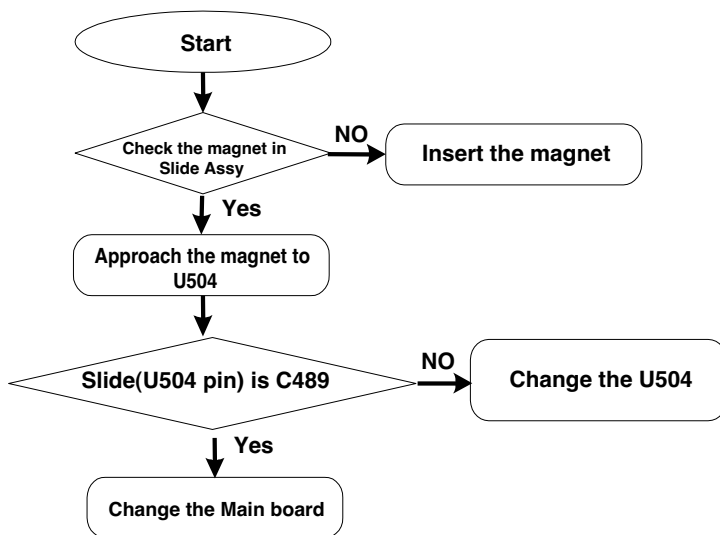


4. TROUBLE SHOOTING

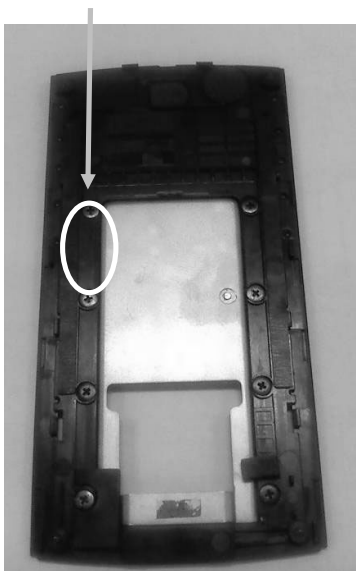
4.11 Slide Close / Open Troubleshooting

Slide Close / Open is worked as below :

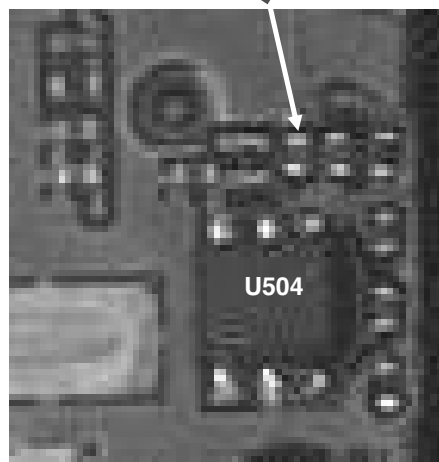
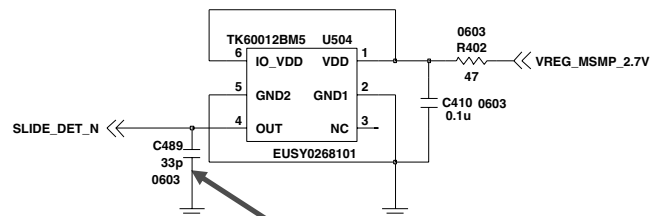
Slide Close / Open Event -> Hall sensor(U504 pin OUT) is triggered -> MSM6280 Sense the Slide Event



Magnet position

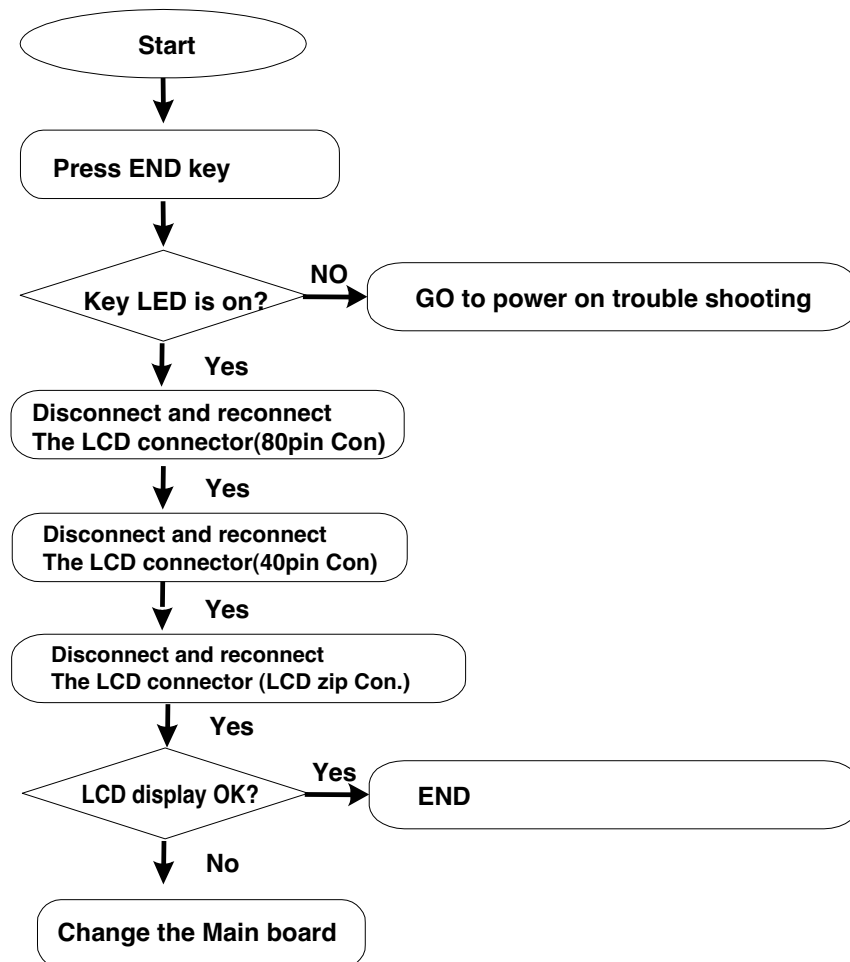


Hall Sensor



4.12 Main LCD Troubleshooting

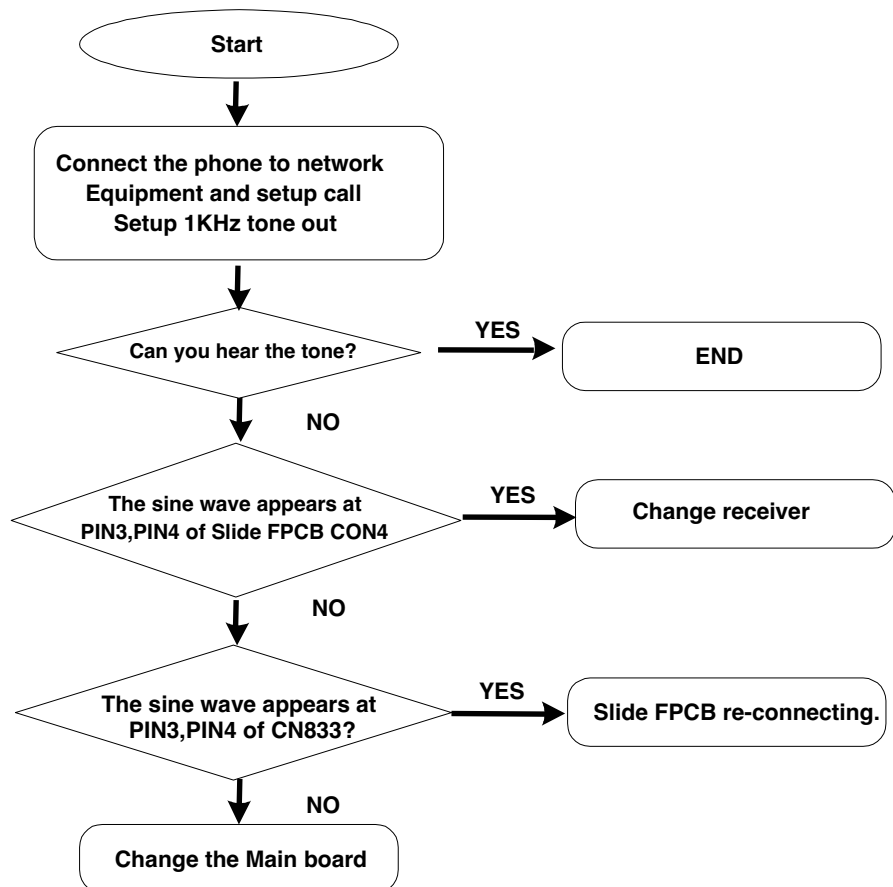
Main LCD control signals are generated by MSM6280. The signal path is :
MSM6280 → CN833+CN4(80pin Con) → CN5+CN3(40pin Con.) → CN2 (LCD zip Con.) → LCD
Module



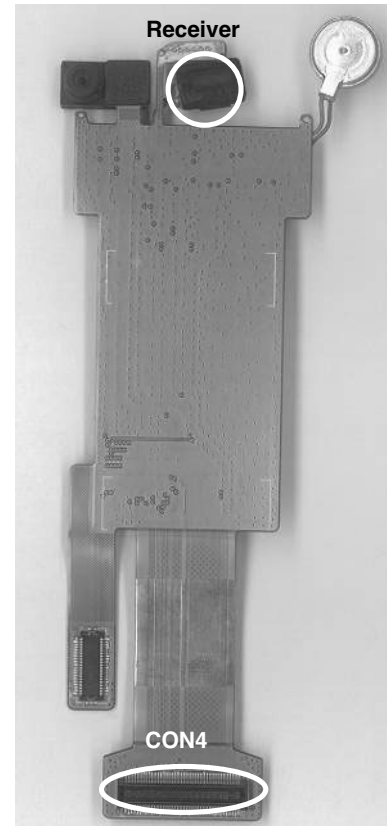
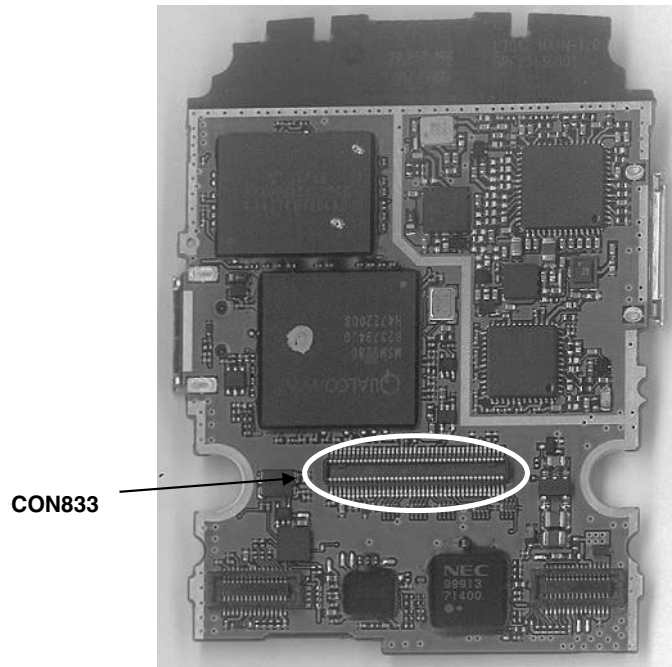
4. TROUBLE SHOOTING

4.13 Receiver Path

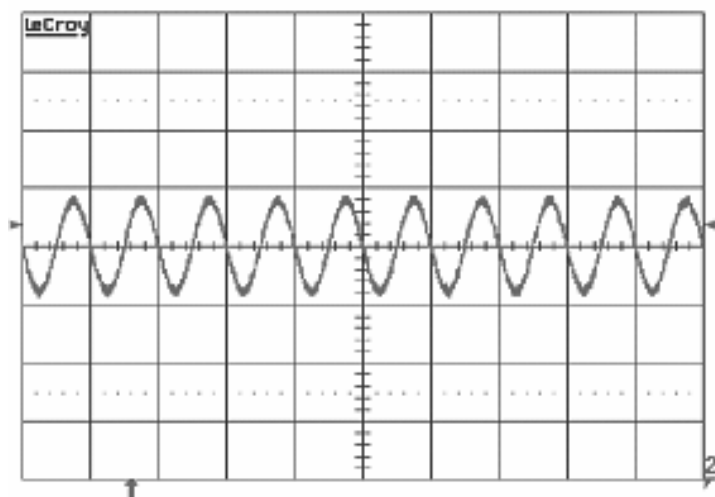
MSM6280 RCV+/RCV- → CN833 → Slide FPCB → Receiver



4. TROUBLE SHOOTING



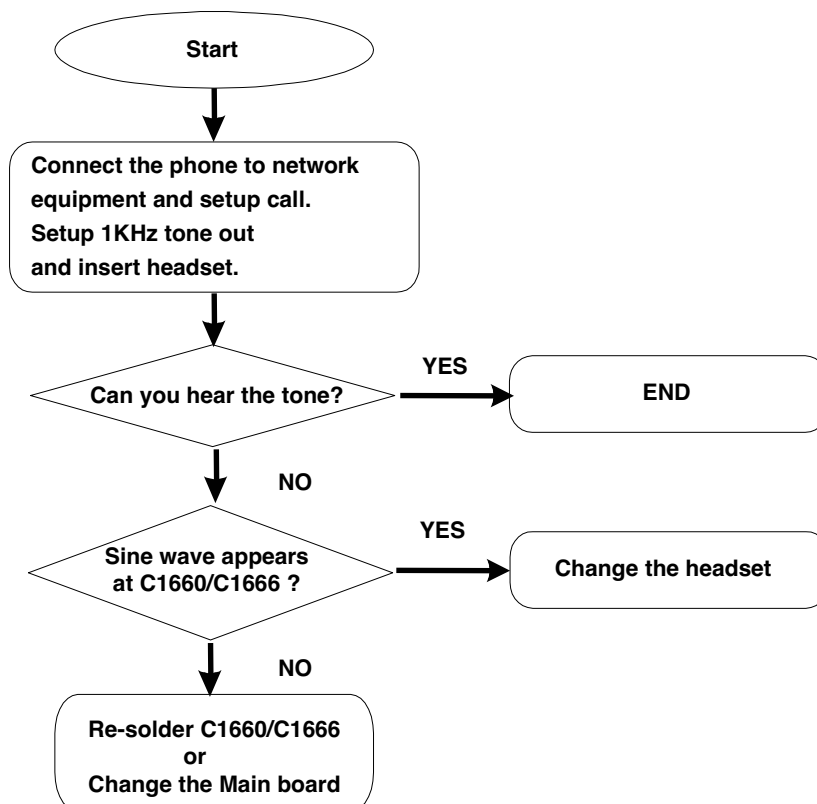
1KHz Sine wave



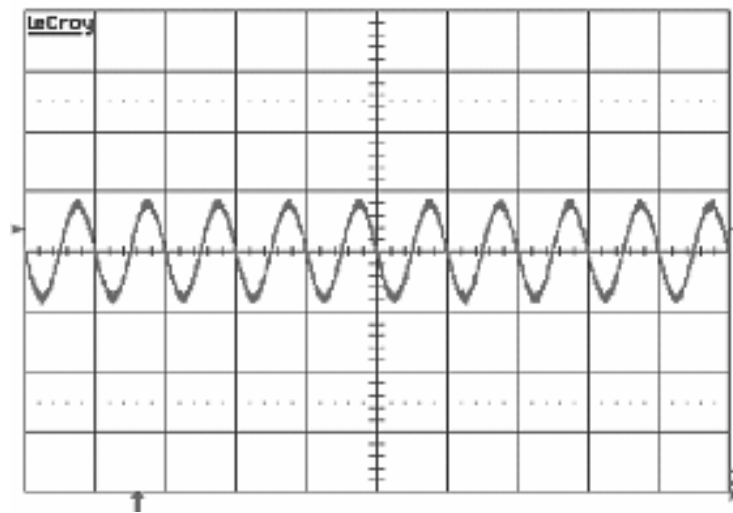
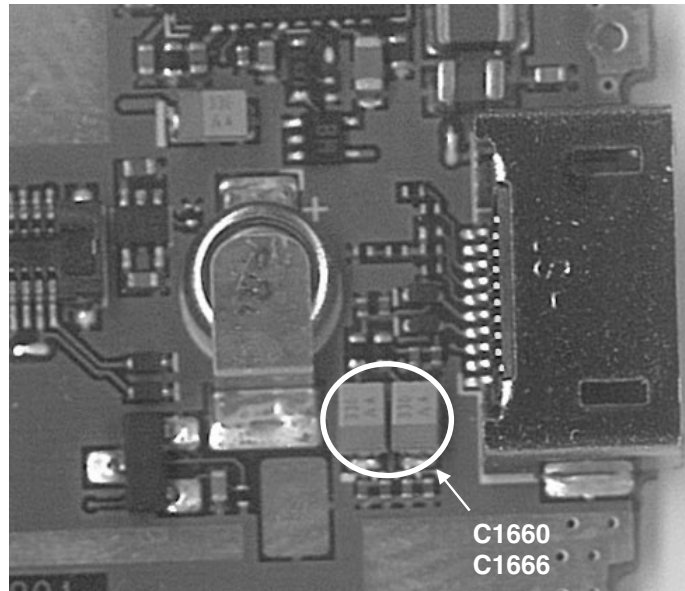
4. TROUBLE SHOOTING

4.14 Headset path

MSM6280 HPH_R, HPH_L → DAC & AMP (U575) → C1660/C1666 → CON838 (Ear jack)



4. TROUBLE SHOOTING

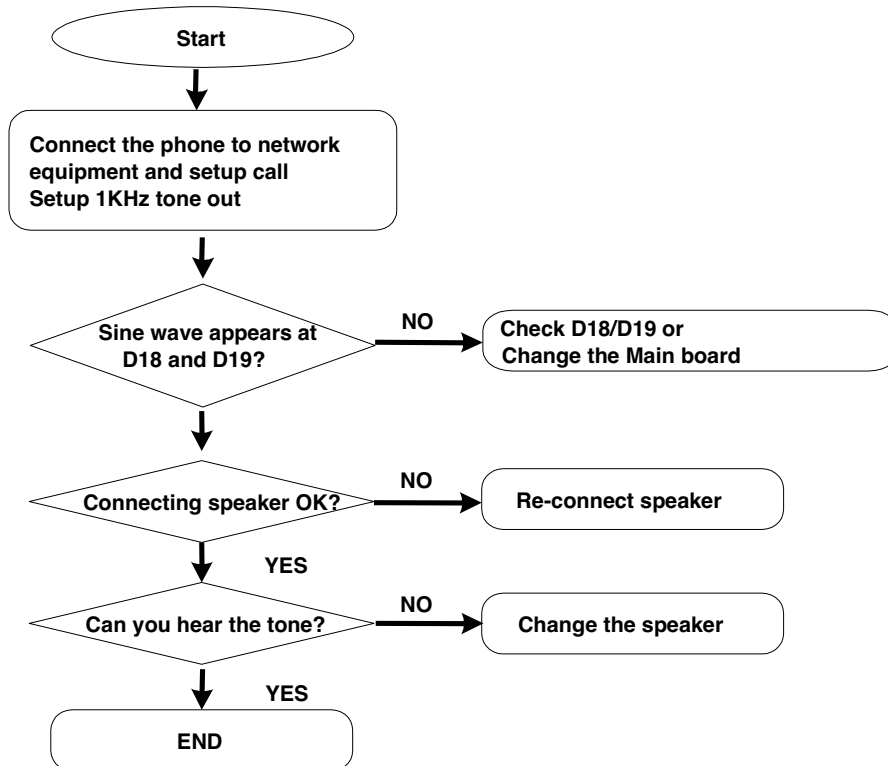


1KHz Sine wave

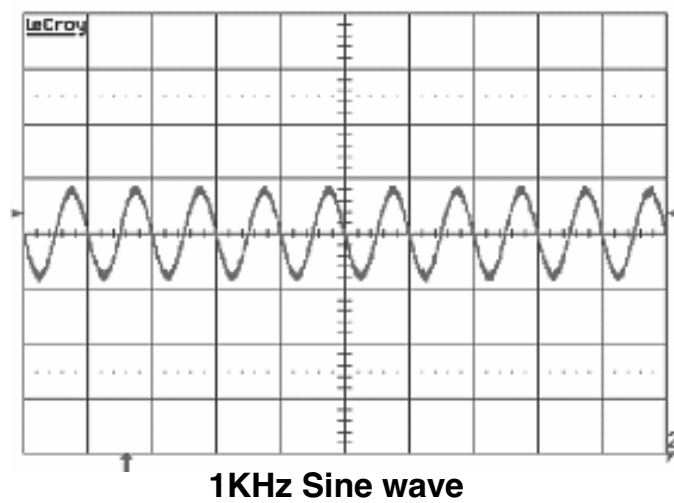
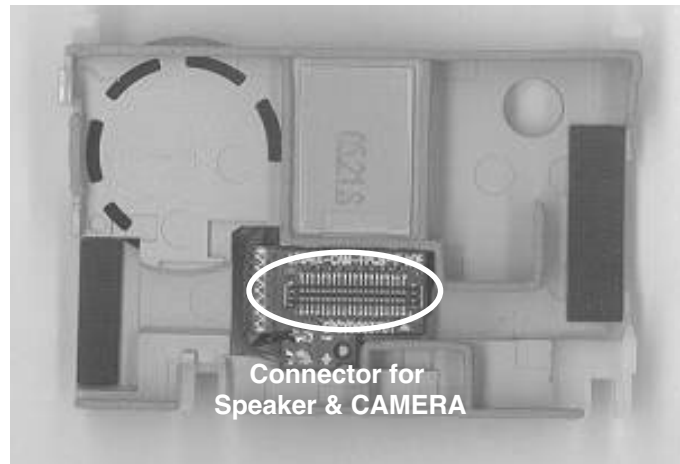
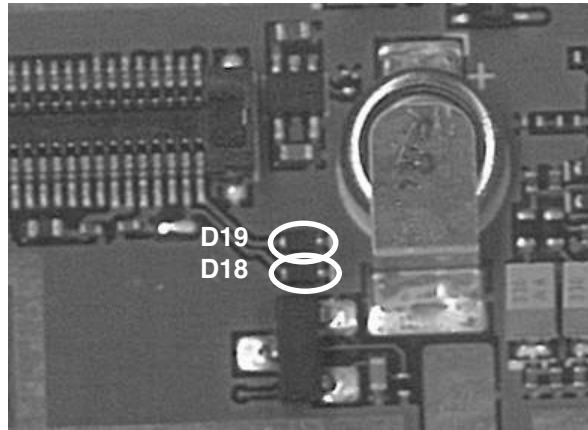
4. TROUBLE SHOOTING

4.15 Speaker phone path

MSM6280 HPH_R, HPH_L -> DAC & AMP(U575) -> connector -> Speaker



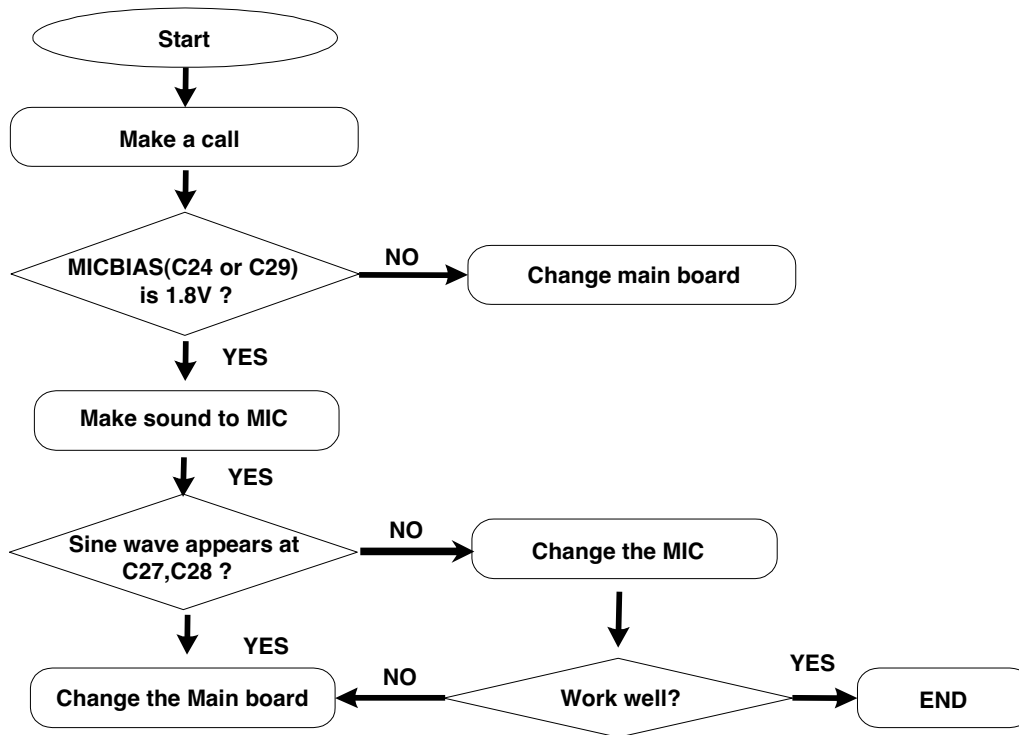
4. TROUBLE SHOOTING



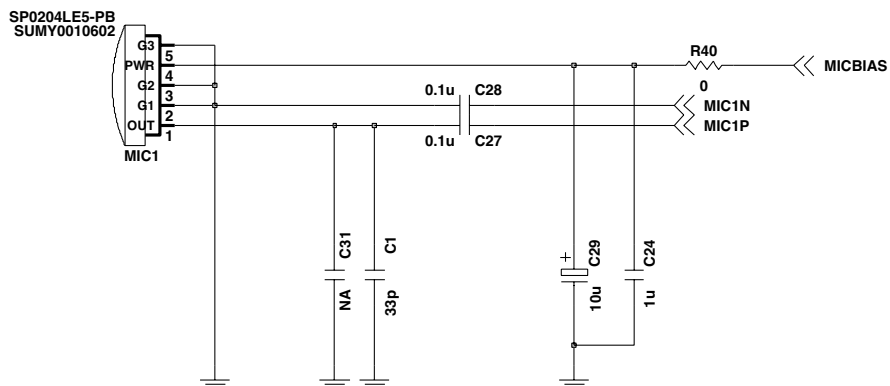
4. TROUBLE SHOOTING

4.16 Main microphone

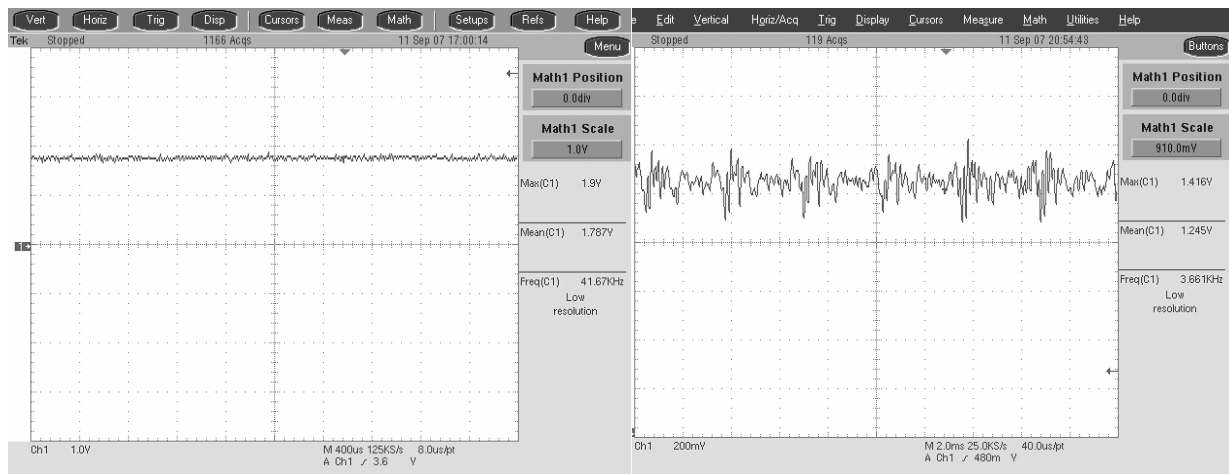
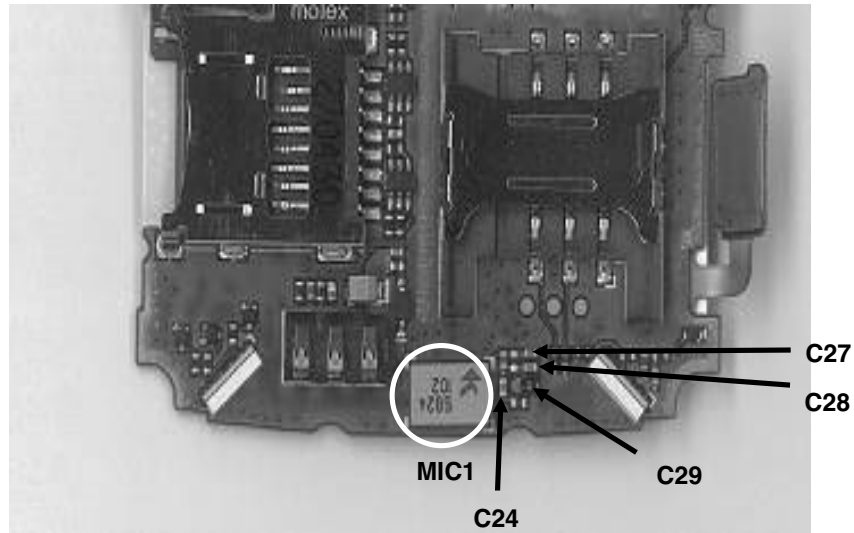
MIC300 -> C323,C324 -> MIC1P,MIC1N(MSM6280)



MIC



4. TROUBLE SHOOTING



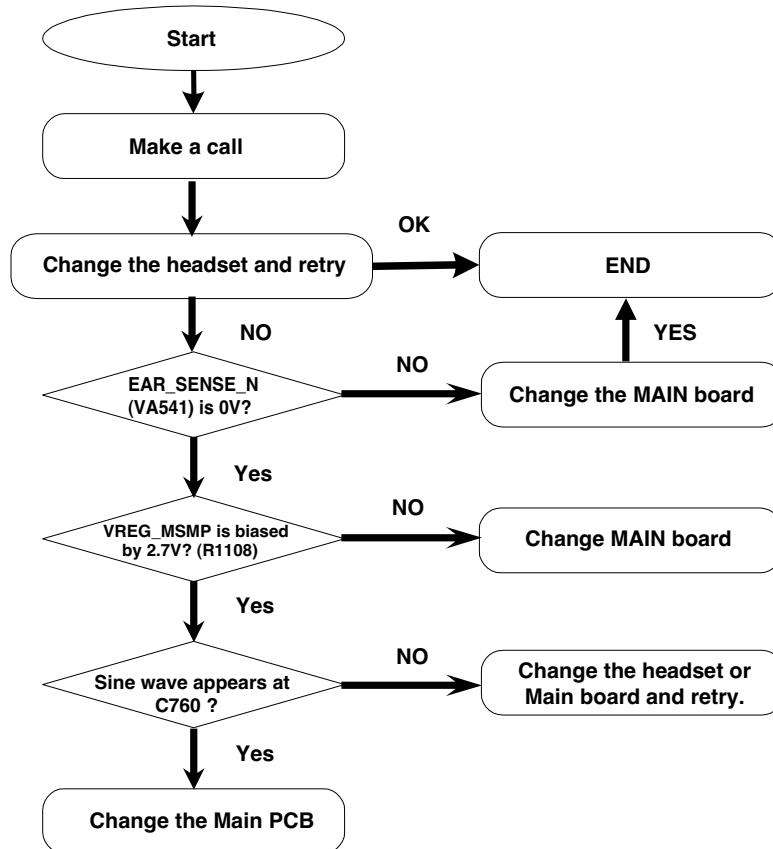
C24 OR C29

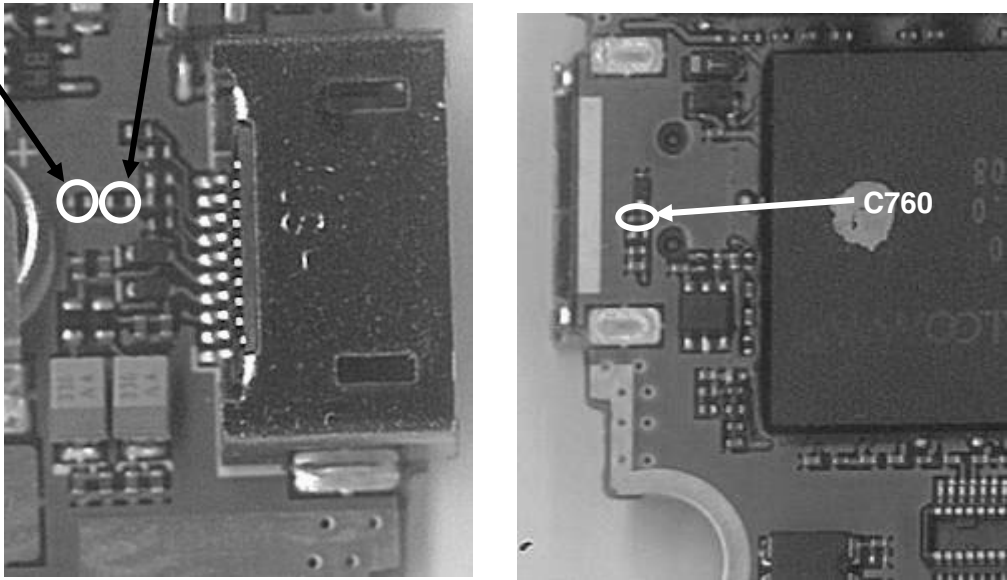
C27 OR C28

4. TROUBLE SHOOTING

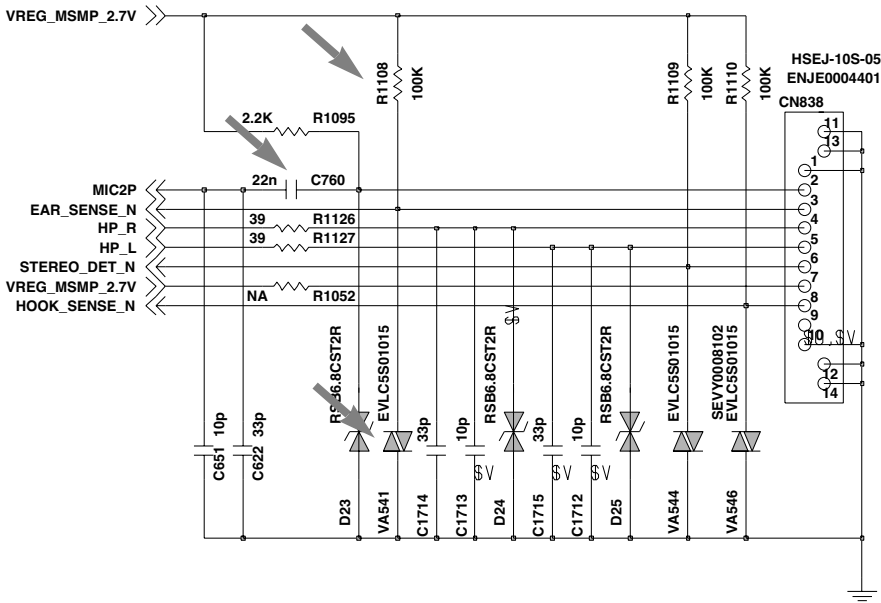
4.17 Headset microphone

Headset -> C760 -> MIC2P(MSM6280)





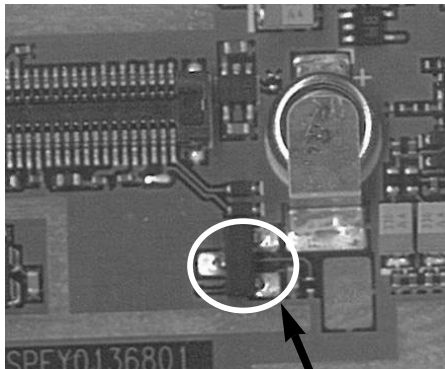
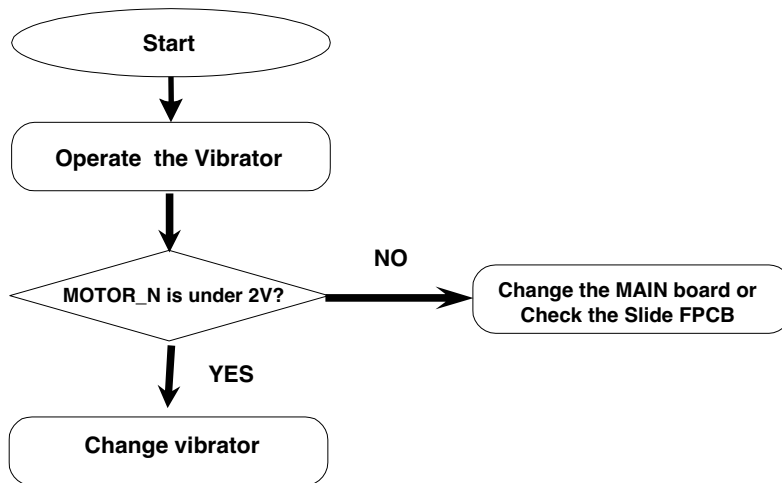
<Ear Jack Connector>



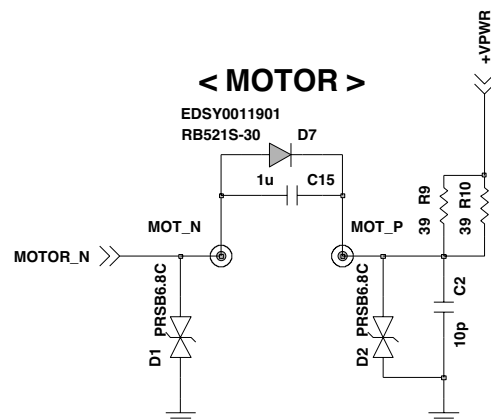
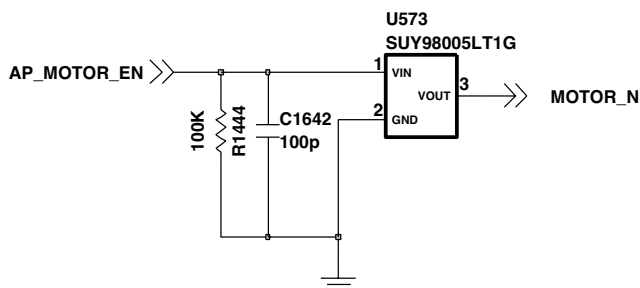
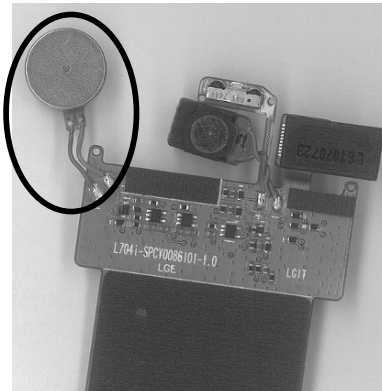
4. TROUBLE SHOOTING

4.18 Vibrator

AP131 AP_MOTOR_N -> Slide FPCB -> Motor



<Main Board>



5. DOWNLOAD

5.1 Introduction

LGMDP is a LGE application that allow users to download images from PC to handset. LGMDP is a download tool with capabilities to upload image files to the handset. LGMDP is designed to be simple to use and easy enough for the beginner to upload executable images to the handset. LGMDP supports Windows 2000/XP where the LG USB modem driver is installed. Additionally, LGMDP allows multi downloading up to 8 handsets at the same time.

* The model name in the picture can be different from yours.

5.2 Downloading Procedure

1) Setup Preferences

Connect the phone to your desktop PC using the USB cable and run the LGMDP application. Before getting started, set up LGMDP preferences from the Preferences of the file menu the way you want. Click on the File menu and select Preferences.

➤ Play a success sound

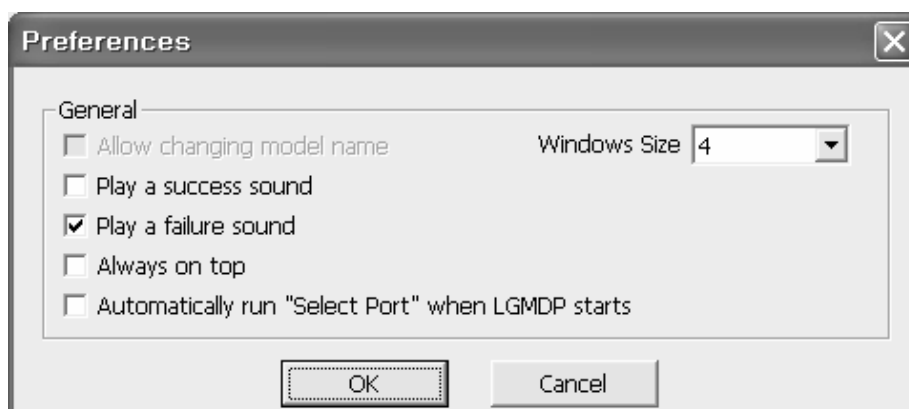
This is an experimental feature. To enable this simply check the box. It will be played a .wav file when the download has been completed.

➤ Automatically run "Select Port" When LGMDP starts

This option is designed to give user convenient. When LGMDP starts, it will automatically select "Select Port" button to download new image file.

➤ Always on Top

Check if LGMDP always appears at the top of the window so that user can monitor it all the time. Windows Size If you want to change program window size, change this option.

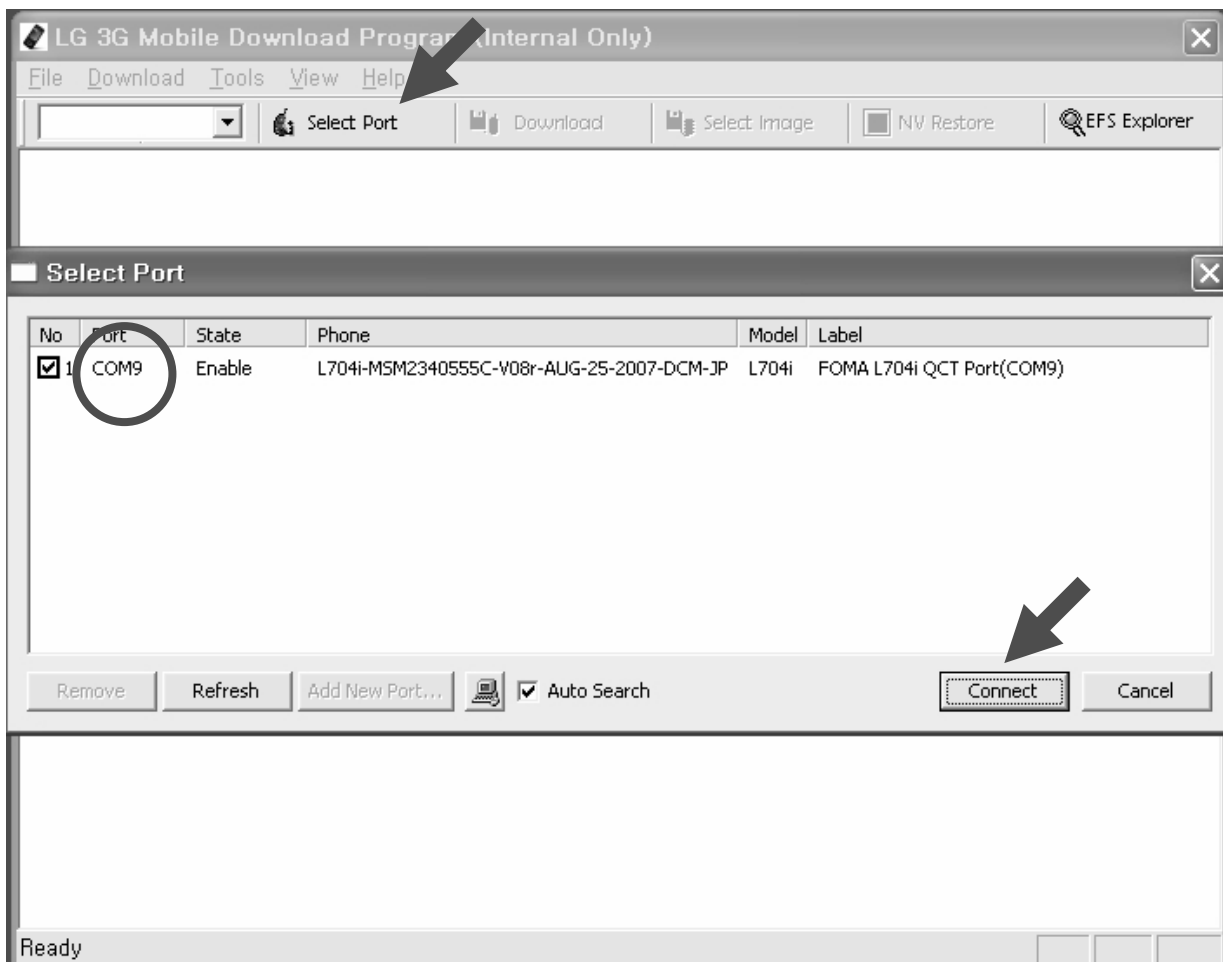


5. DOWNLOAD

1) Connecting to PC

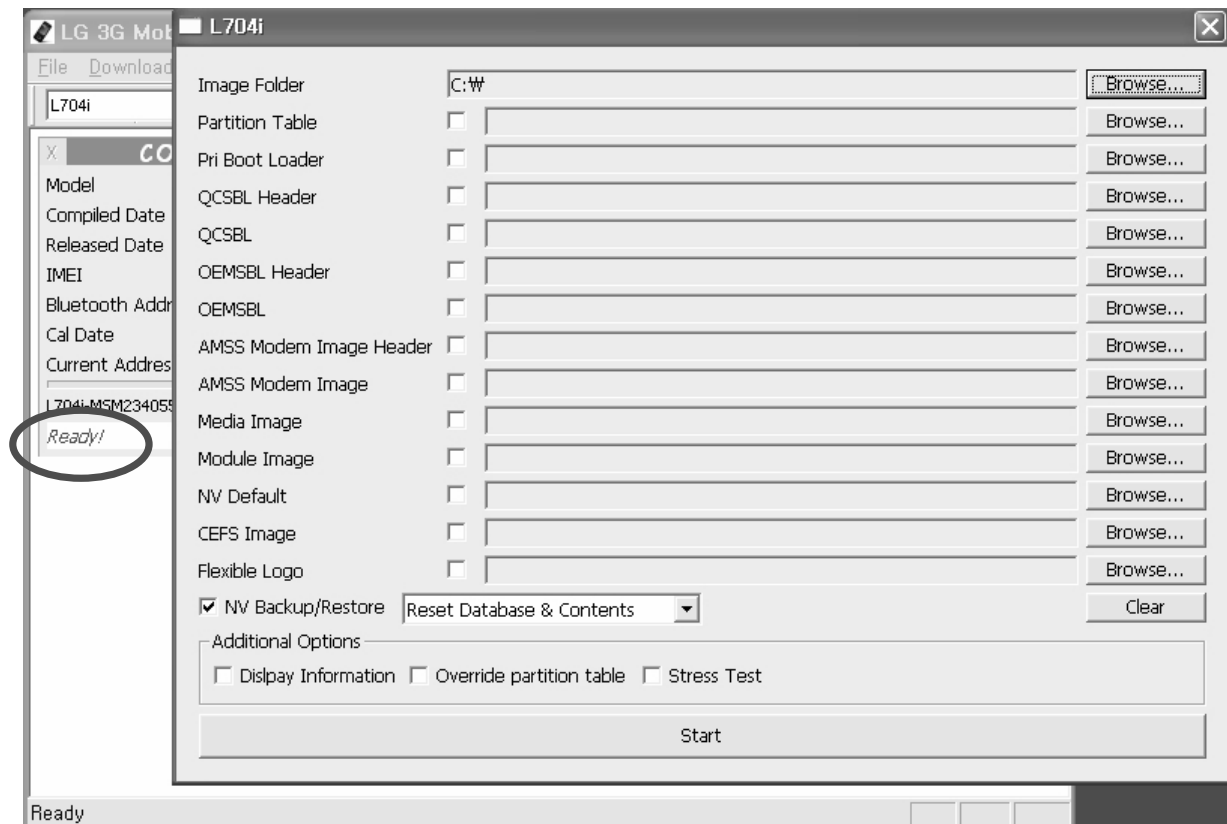
Click on the Select Port and then Select Port window will be pop up. Check if state shows Enable for the port to be connected for downloading images. Then click on the Connect button.

(The port number(COM9) and model name shall be different from that of the port number in the snapshot.)



5. DOWNLOAD

The status Ready is displayed when the application is ready for downloading. While the images are transmitted from PC to the handset, a progressive bar (Red box) indicating the degree of transmission of data is displayed.



5. DOWNLOAD

The following slide describes how to use or set options in detail.

(The model name shall be different from that of the model name in the snapshot.)

1) Image Folder: C:\image\T20070828_AMSS2340555C_V08s_pre1\WL704IXJD [Browse...]

2)	Partition Table	<input checked="" type="checkbox"/>	C:\image\T20070828_AMSS2340555C_V08s_pre1\WL704IXJD\partit	[Browse...]
	Pri Boot Loader	<input checked="" type="checkbox"/>	C:\image\T20070828_AMSS2340555C_V08s_pre1\WL704IXJD\wpbl.m	[Browse...]
	QCSBL Header	<input checked="" type="checkbox"/>	C:\image\T20070828_AMSS2340555C_V08s_pre1\WL704IXJD\wqcsbl	[Browse...]
	QCSBL	<input checked="" type="checkbox"/>	C:\image\T20070828_AMSS2340555C_V08s_pre1\WL704IXJD\wqcsbl	[Browse...]
	OEMSBL Header	<input checked="" type="checkbox"/>	C:\image\T20070828_AMSS2340555C_V08s_pre1\WL704IXJD\woems	[Browse...]
	OEMSBL	<input checked="" type="checkbox"/>	C:\image\T20070828_AMSS2340555C_V08s_pre1\WL704IXJD\woems	[Browse...]
	AMSS Modem Image Header	<input checked="" type="checkbox"/>	C:\image\T20070828_AMSS2340555C_V08s_pre1\WL704IXJD\wamssl	[Browse...]
	AMSS Modem Image	<input checked="" type="checkbox"/>	C:\image\T20070828_AMSS2340555C_V08s_pre1\WL704IXJD\wamss	[Browse...]
	Media Image	<input type="checkbox"/>		[Browse...]
	Module Image	<input type="checkbox"/>		[Browse...]
	NV Default	<input type="checkbox"/>		[Browse...]
	CEFS Image	<input type="checkbox"/>		[Browse...]
	Flexible Logo	<input type="checkbox"/>		[Browse...]

3) ☒ NV Backup/Restore **4)** Reset Database & Contents **6)** [Clear]

5) Additional Options **7)**

☐ Display Information ☐ Override partition table ☐ Stress Test

8) [Start]

- 1) Image Folder indicates loot path where all image files are placed. To change location of the default image path, select Browse... button. The edit box shows the file path where new images are located. Please note that all images should be located in a selected folder.
(This program support the automatically loading image for some models based on MSM6275 or MSM6280)
- 2) Click on the Browse... button to select image files to be downloaded on the handset.
- 3) **NV Backup/Restore:** NV Backup/Restore always have to be done, and it is default selected option.
Backup the NV data and restore the backed up NV data automatically.
- 4) **Reset database & Contents:** User related data including the setting data on the EFS is reset in the handset. The contents in the handset will be erased.

Erase_EFS: The calibration data, user contents, media, and module are erased. Only calibration data is kept when NV backup/restore is checked.

Keep All Contents: Maintain user data including WAP, AD, DRM, Email, Play lists, images When downloading a new images, user data stated above are maintained if this option is enable.
- 5) **Additional Options:**
Display Information is defaulty not selected and user cannot choose.

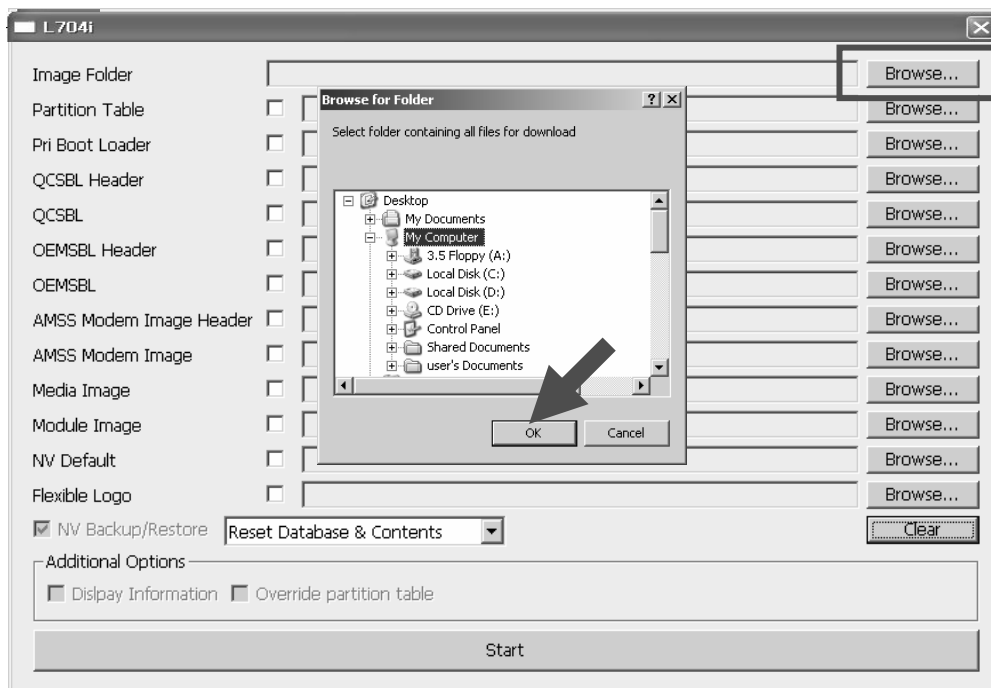
Security: The security option is automatically selected based on the selected country when security box is selected.
 - Integrity is selected when the selected country is UK, Italy, Hong Kong, Austria, or Israel.
 - Cipherring is not applied or used for H3G user.
 - Fake Security is not applied or used for H3G user.
 - Integrity + Cipherring is selected when the selected country is Australia, Sweden, or Denmark.Please note that user cannot select the options stated above on the security
- 6) **Clear:** Clearing all directory paths of images in the dialog.
- 7) **Override Partition Table:** If memory map was changed, you must select this option. (Defaultly selected option)
- 8) **Start:** Starting downloading the selected individual image.

5. DOWNLOAD

2) Choosing image files

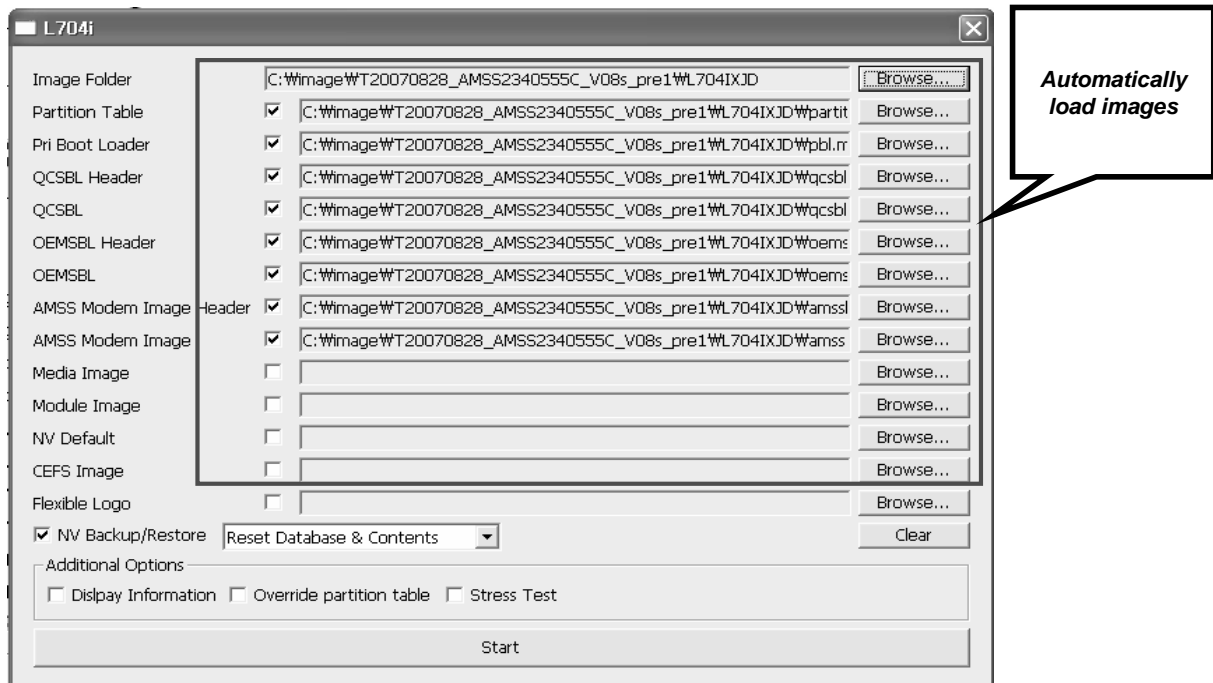
Select the image folder, where all the image files are located, by clicking on the Browse... button. (The folder name shall be different from that of the folder name in the snapshot. The folder name indicates the path where the image files are located.)

★ if you select the image folder, the program will automatically load images accordingly.



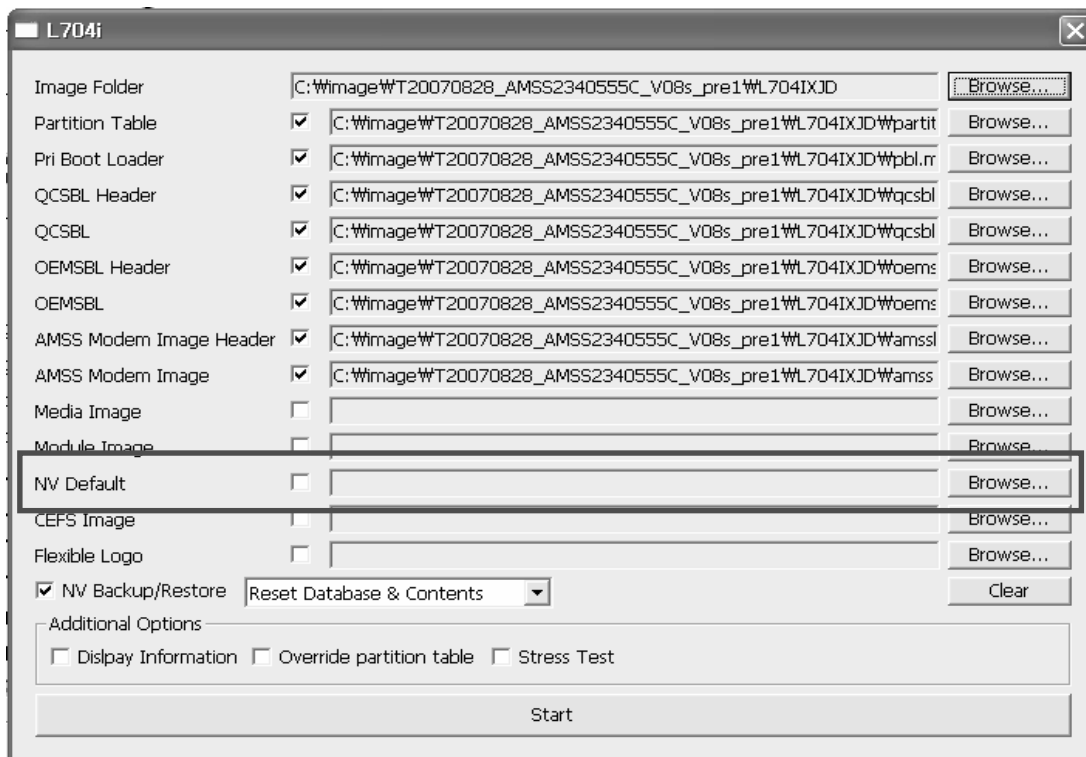
5. DOWNLOAD

★ if you select the image folder, the program will automatically load images accordingly.



5. DOWNLOAD

If NV restore is failed, then the NV Data(*.nv2) is erased permantly. In this case, choose the desired NV file to be downloaded on the handset. To enable this simply check the box or select the NV file from the LGMDP installation directory by clicking on the Browse... button.

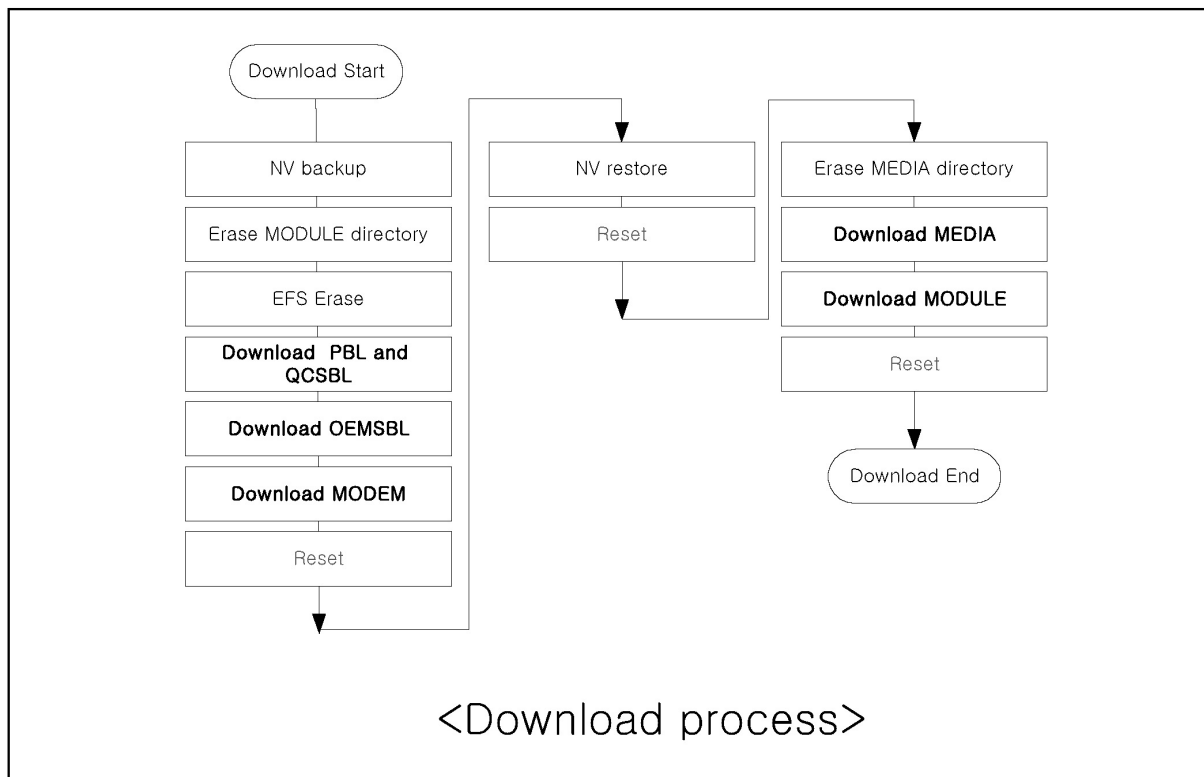


Click on the **START** button to start downloading.

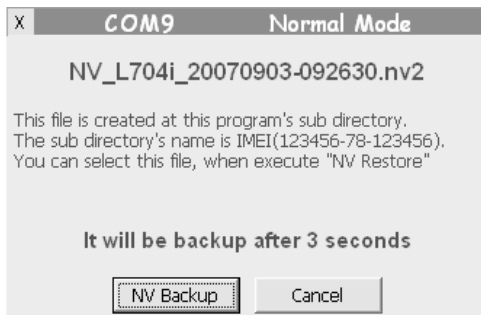
Normally LGMDP will download all files that need downloading. To download selected image file only simply select the image file that user want to process downloading.

3) Downloading

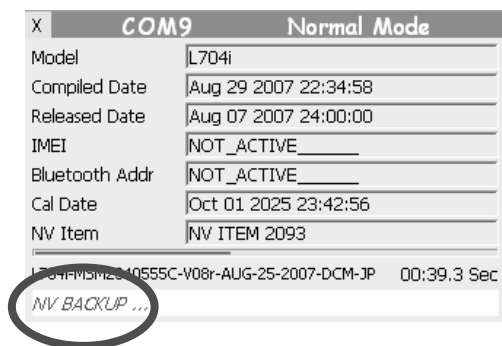
The following flow chart is whole process for downloading images to the handset. You will see snapshots for each step in the succeeding slides.



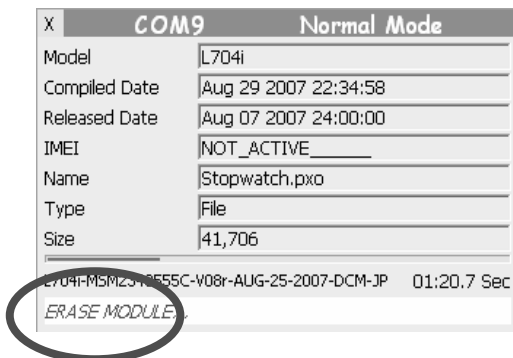
5. DOWNLOAD



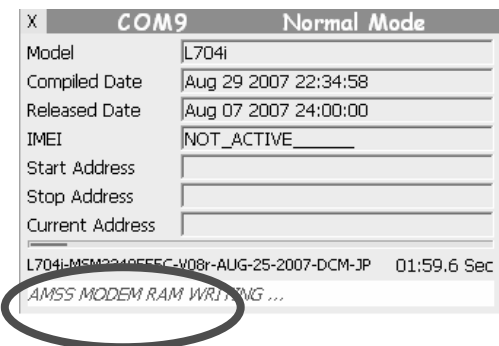
- This message box informs that a new file for NV backup will be created in the displayed file name in the LGMDP installation directory.



- Backing up NV data and backed up NV data will be stored in the LGMDP installation directory.



- Erasing the existing directories and files before the Module image is downloaded.

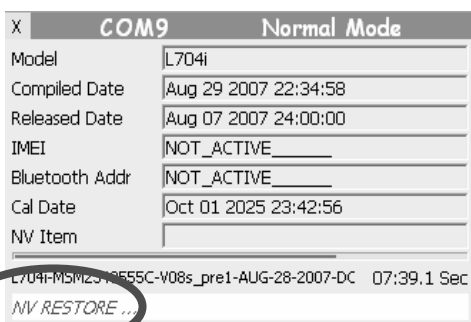


- Downloading the AMSS modem image

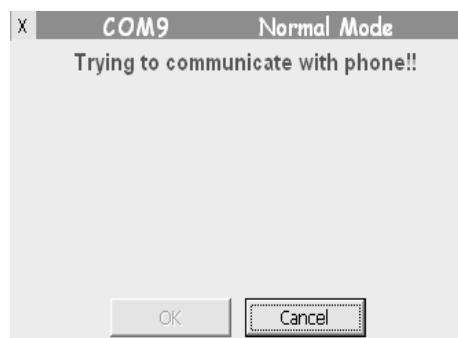
5. DOWNLOAD



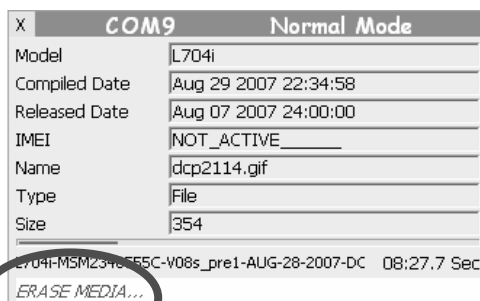
- Rebooting the handset and re-establishing the connection



- Restoring NV data which backed up in the Backing up process. User can also restore NV data using NV Default image selection.



- Rebooting the handset and re-establishing the connection



- Erasing the existing directories and files before downloading the selected Media image

5. DOWNLOAD

X	COM9	Normal Mode
Model	L704i	
Compiled Date	Aug 29 2007 22:34:58	
Released Date	Aug 07 2007 24:00:00	
IMEI	NOT_ACTIVE_____	
Name	Face_6.bin	
Type	File	
Size	5,798/5,798	
L704i-MSM2340555C-V08s_pre1-AUG-28-2007-DC 08:46.9 Sec		
MEDIA DOWNLOADING ...		

- Downloading Media image in progress

X	COM9	Normal Mode
Model	L704i	
Compiled Date	Aug 29 2007 22:34:58	
Released Date	Aug 07 2007 24:00:00	
IMEI	NOT_ACTIVE_____	
Name	batterylevel.pxo	
Type	File	
Size	57,344/137,690	
L704i-MSM2340555C-V08s_pre1-AUG-28-2007-DC 13:23.5 Sec		
MODULE DOWNLOADING ...		

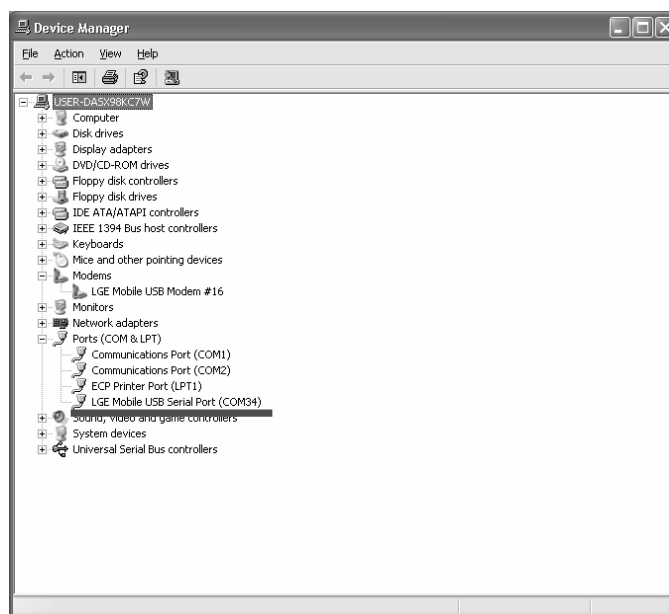
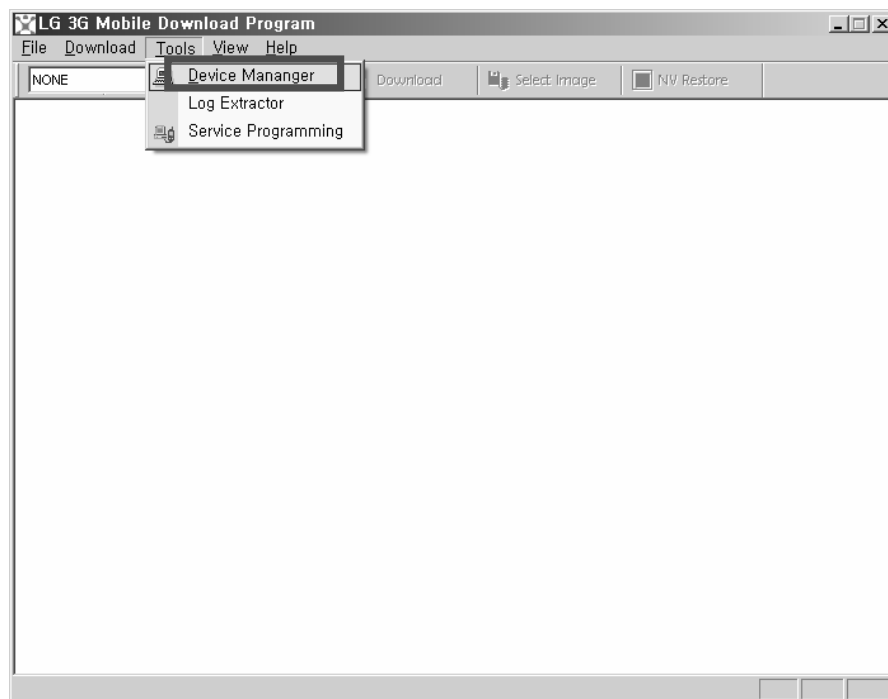
- Downloading Module image in progress

X	COM9	Download End
Model	L704i	
Compiled Date	Aug 29 2007 22:34:58	
Released Date	Aug 07 2007 24:00:00	
IMEI	NOT_ACTIVE_____	
Bluetooth Addr	NOT_ACTIVE_____	
Cal Date	Oct 01 2025 23:42:56	
Current Address		
L704i-MSM2340555C-V08s_pre1-AUG-28-2007-DC 17:05.0 Sec		
Download Completed! (08:43:35)		

- Downloading process has completed successfully

4) Tools

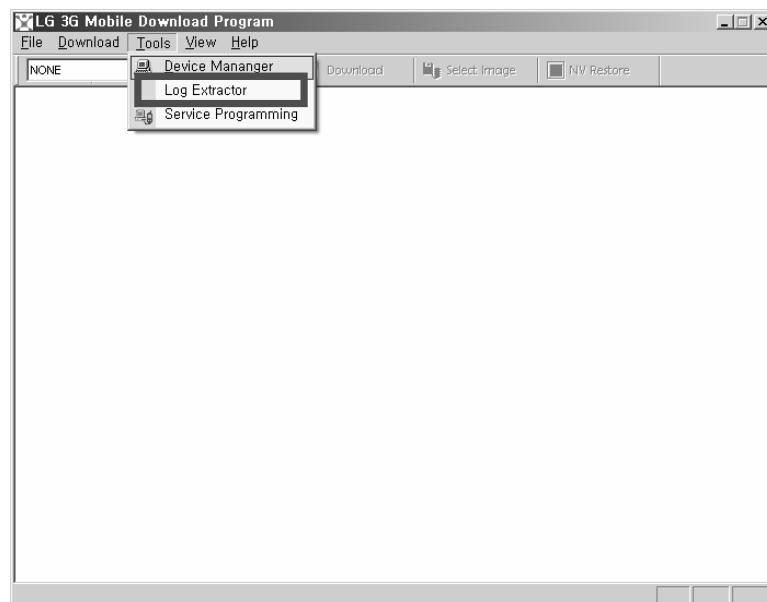
Device Manager allows to monitor current hardware that is installed on your PC. Device Manager is designed to monitor USB connectivity and check where the COM has been installed . Select **Device Manager** from the **Tools** of the file menu.



5. DOWNLOAD

Log Extractor is designed to extract log information from handset and store log related files in the selected root path in PC. This function is very useful for debugging. Select Log Extractor from the Tools of the file menu, and connect the phone with LGMDP by clicking on the Connect button. When clicking on the Connect button, this checks if the appropriate files such as LFAPP/RecMngr.bin, err directory, Debugging_Tip.txt, or Hidden_info.bin are placed on the handset.

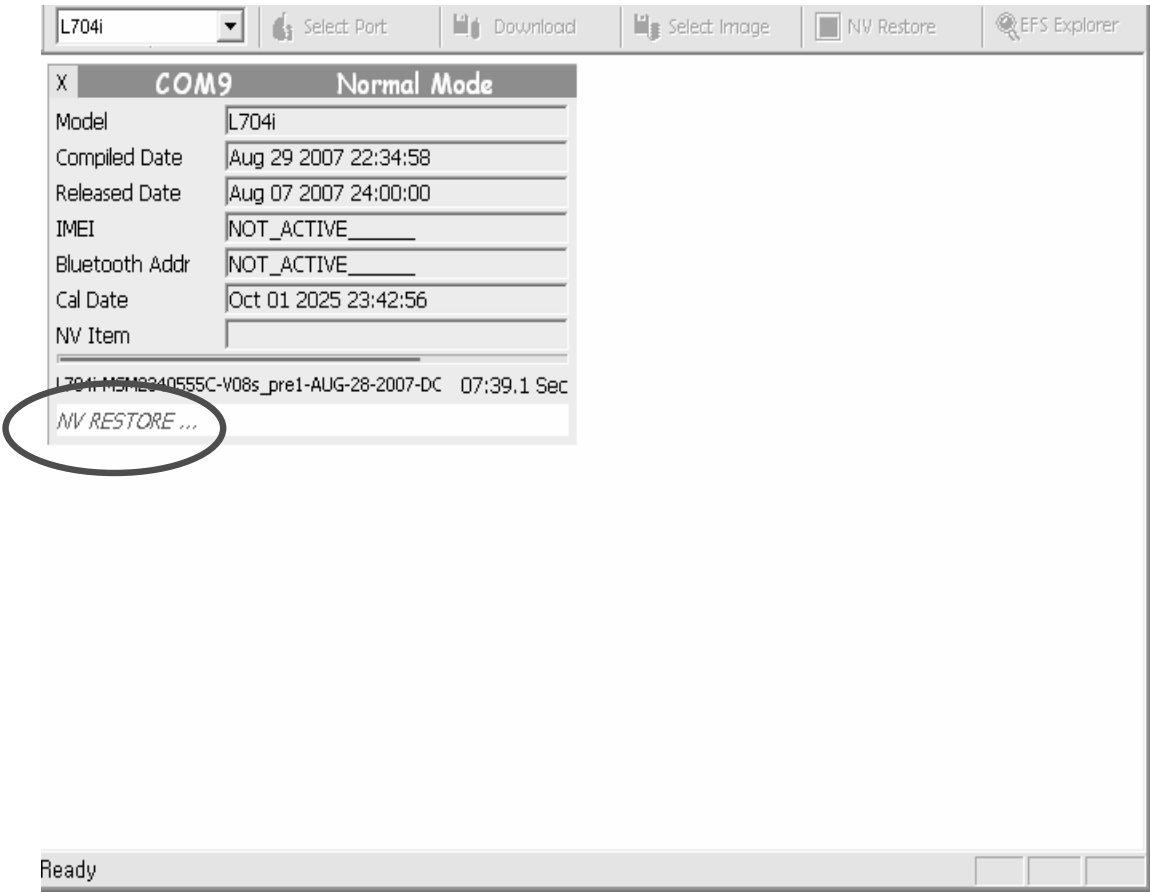
If they are exist, then appropriate check boxes are checked accordingly. Select directory to store log files by clicking on the ... button.



5.3 Troubleshooting Download Errors

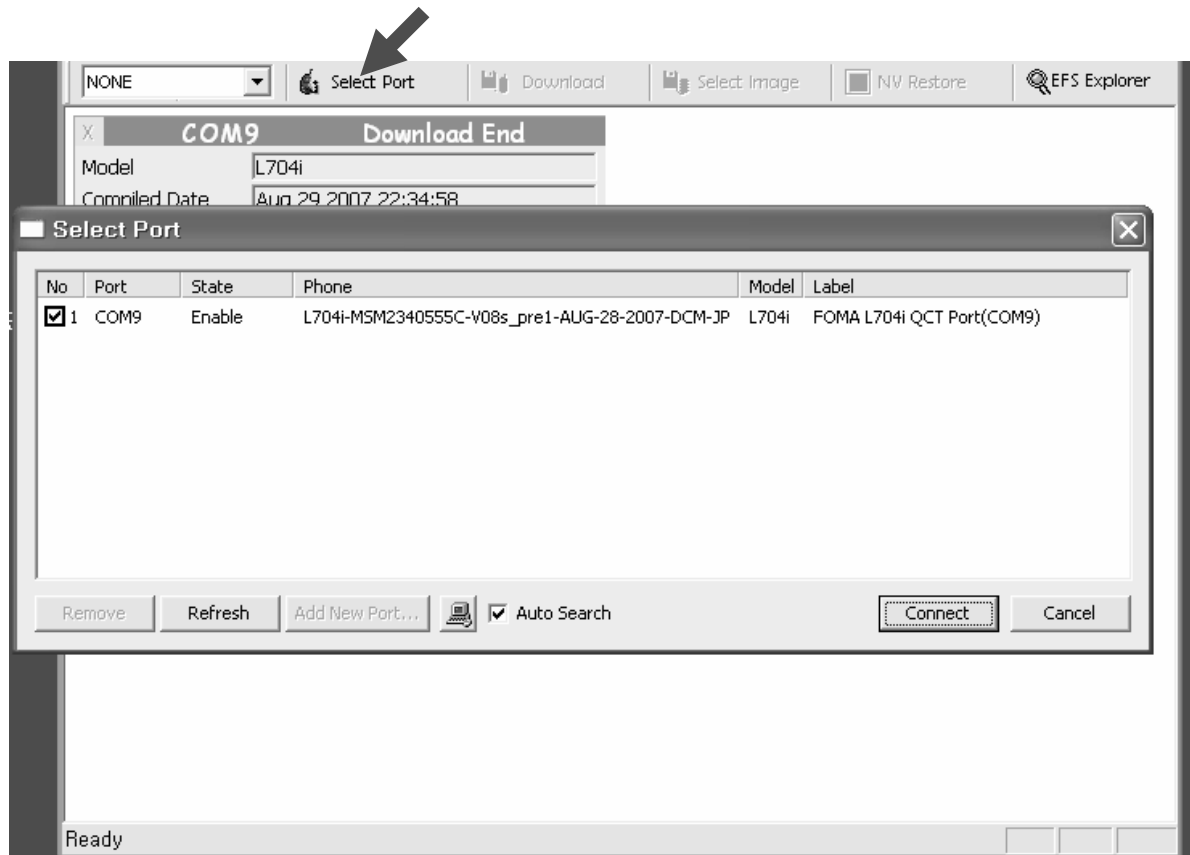
1) NV Restore error

When you meet the “NV Restore error”,



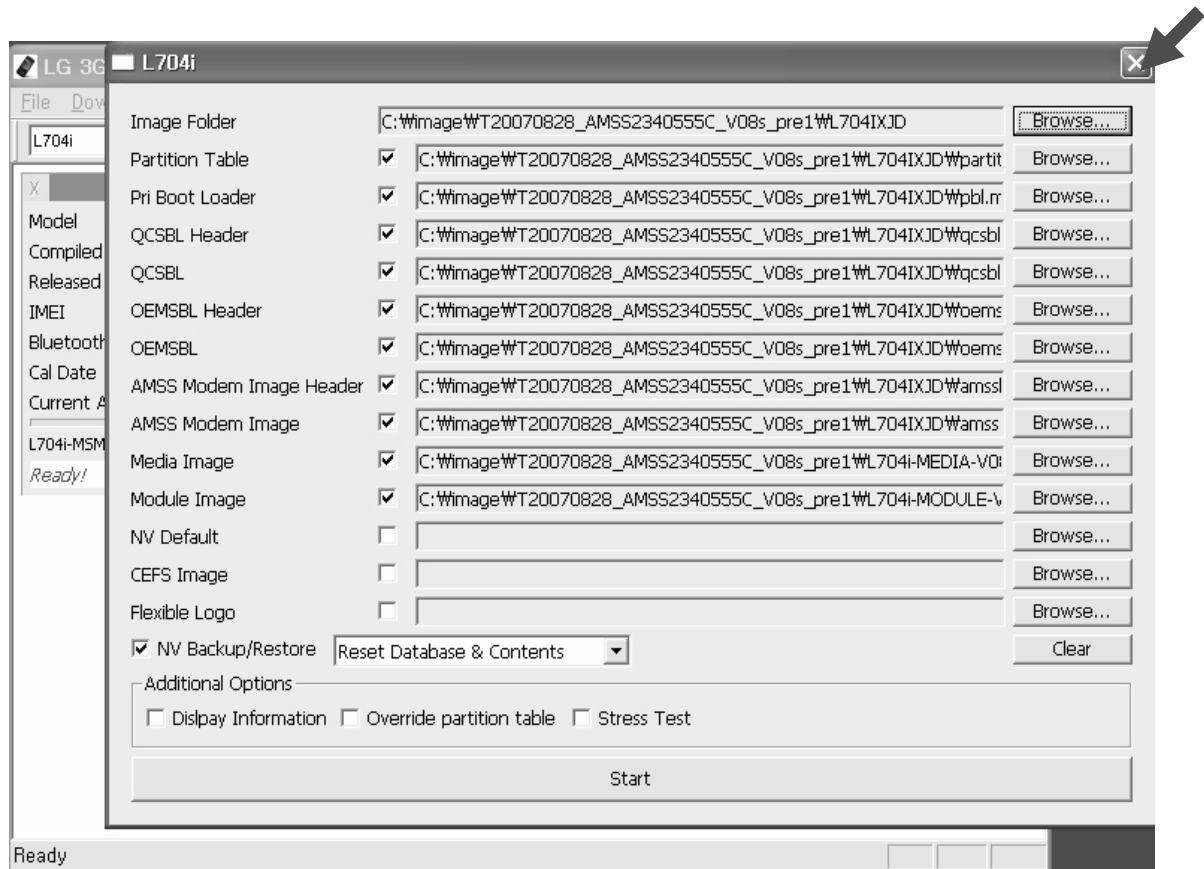
5. DOWNLOAD

→ Connect to the phone.



5. DOWNLOAD

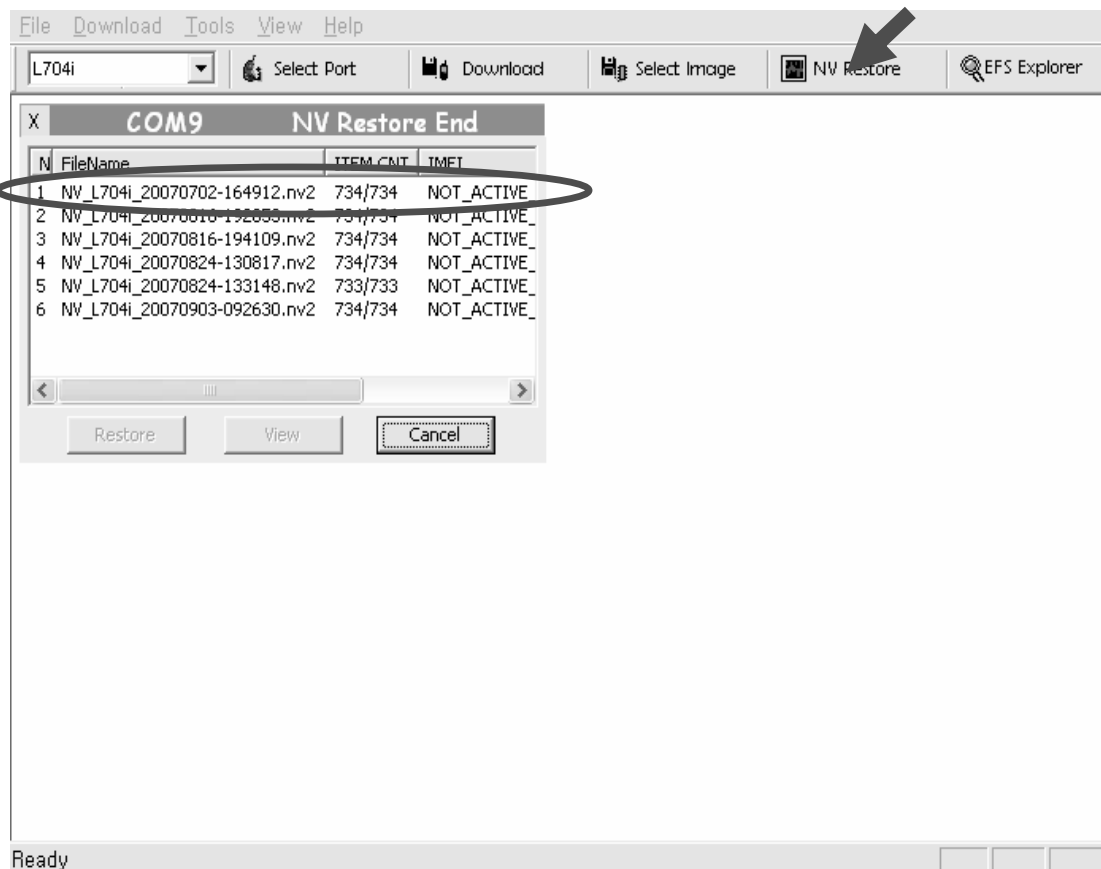
→ Click on 'Cancel'.



5. DOWNLOAD

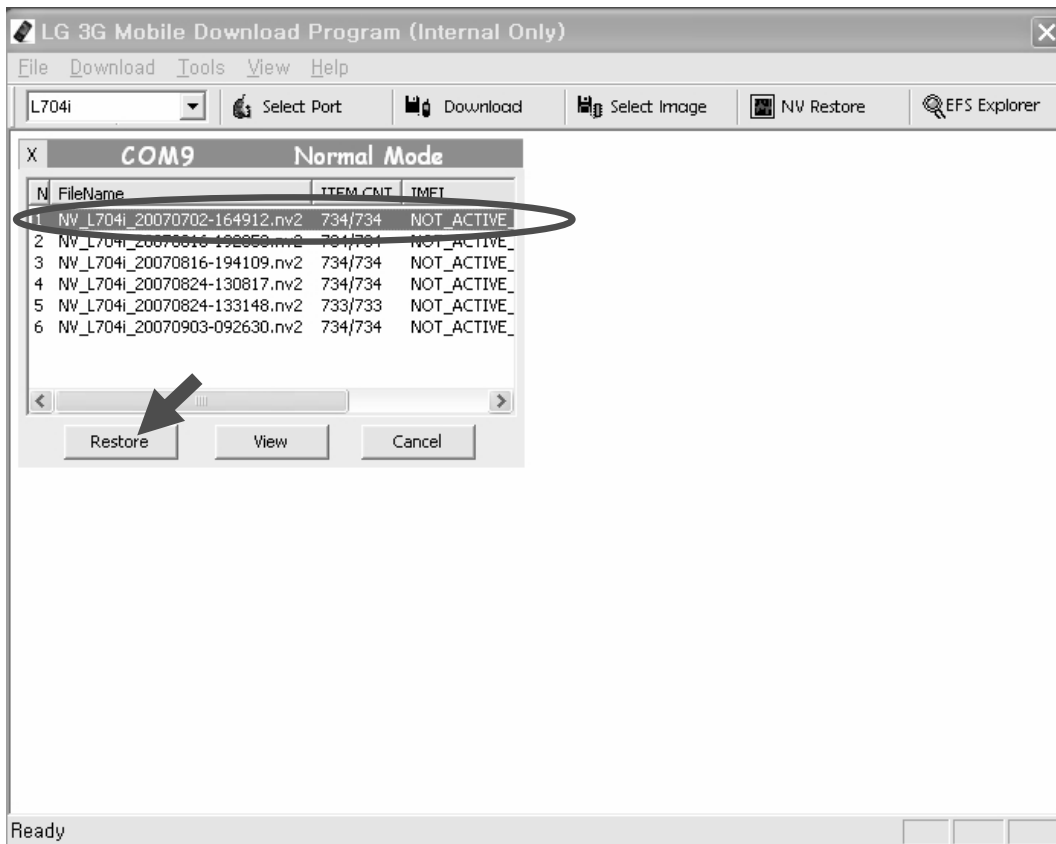
→ Click on 'NV Restore' then several NV Backup files(*.nv2) are shown.

★ The files are saved every NV Backup. The name is based on the time when NV Backup is done.)



5. DOWNLOAD

→ Select the proper file and click on 'Restore'.

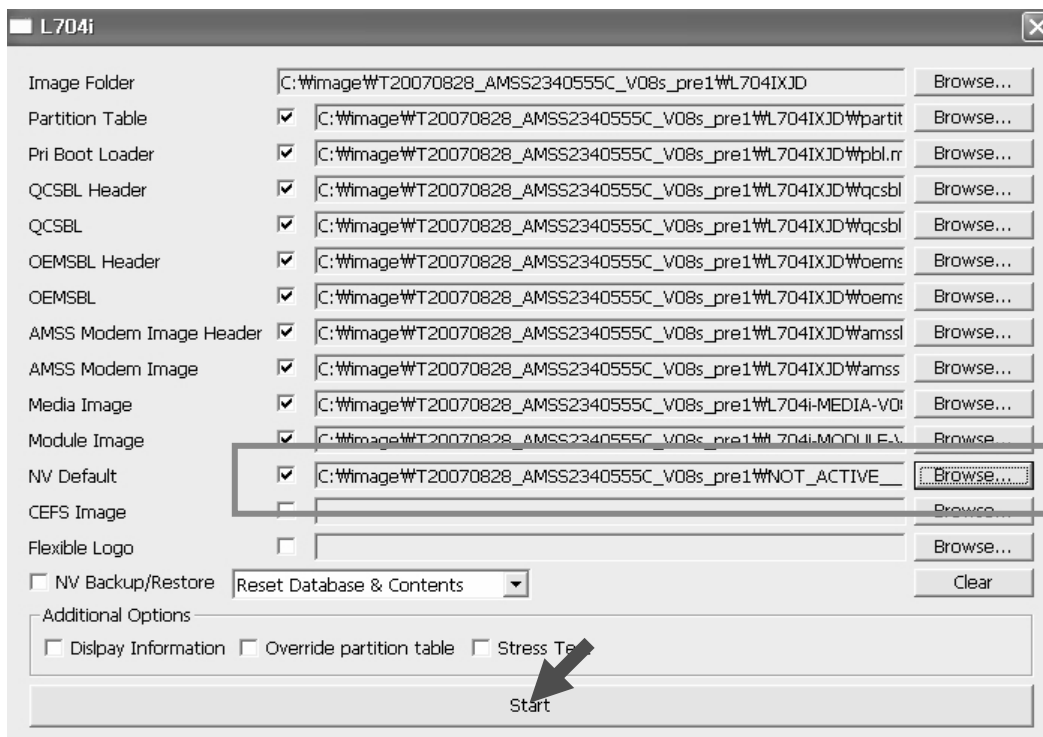
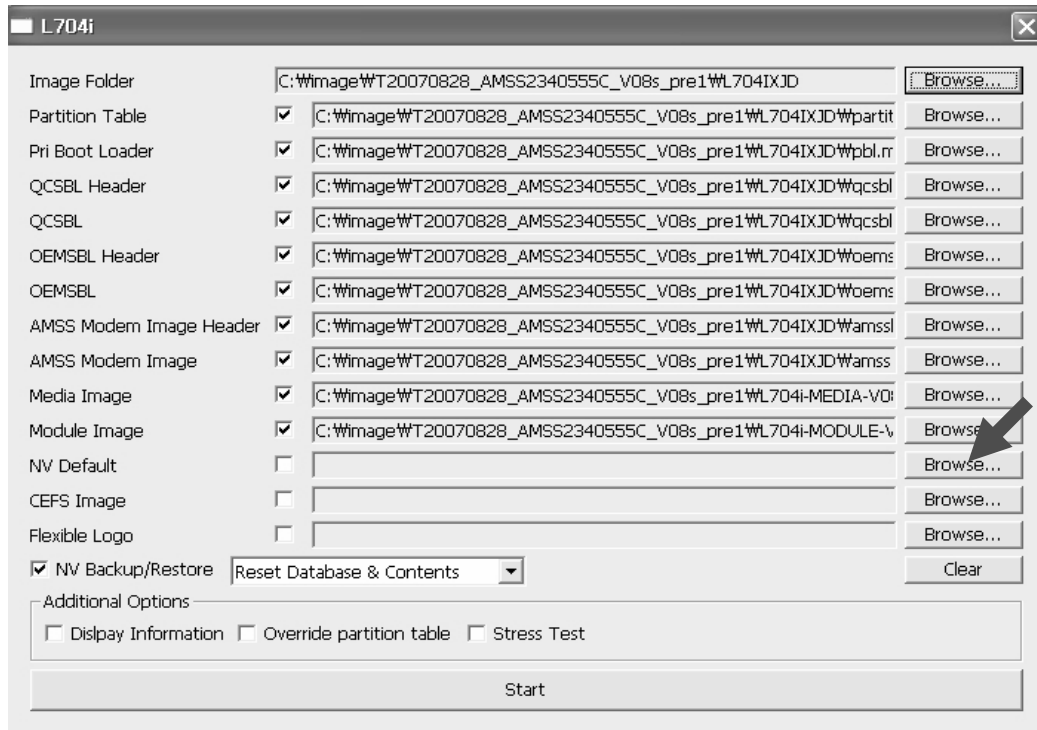


5.4 Caution

- 1) Not recommended that multi-downloading using the USB hub.
- 2) Recommended that the Module and Media Image have to be downloaded at the same time.

5. DOWNLOAD

→ If you want image download and NV backup file restore at once, use the NV Default function.



5.4 Caution

- 1) Multi-downloading using the USB hub is not recommendable.
- 2) If you see the message 'cal mode' after 'completing download', you must do NV restore and image (media and module) download.
- 3) In emergency mode, you can not download the media and module image. So if you want download media and module image, connect the phone normal mode after emergency mode download, and then you can do it.
- 4) The NV data saved at LGMDP folder like this.



- 5) Recommended that the Module and Media Image have to be downloaded at the same time.
- 6) Erase EFS option will erase everything (media, module, nv items, and user data) in the EFS area.

6. BLOCK DIAGRAM

6. BLOCK DIAGRAM

6.1 GSM & UMTS RF Block

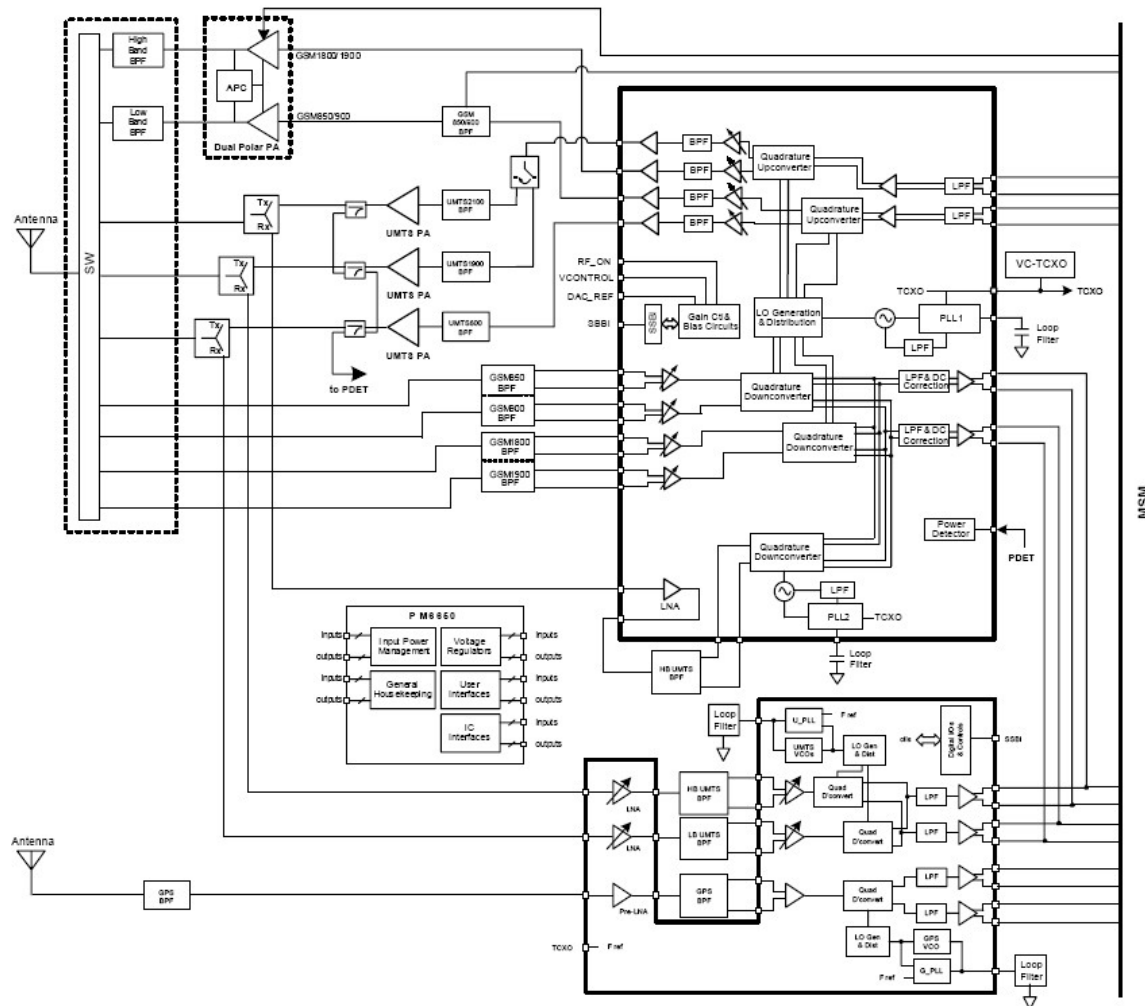


Fig 2.1-1.UMTS-800,2100+GSM-900/DCS-1800/PCS-1900 RF Functional Block Diagram

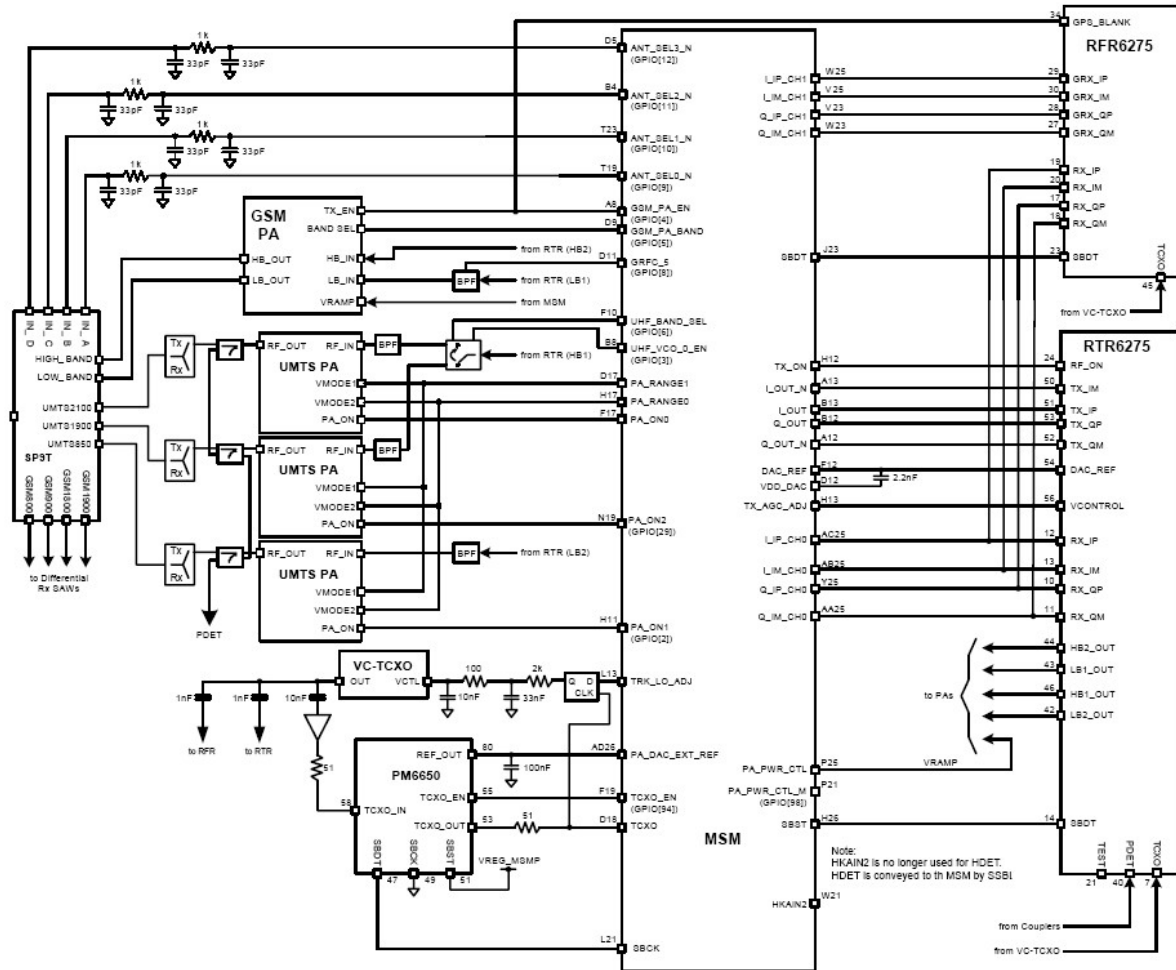
6. BLOCK DIAGRAM

Ref. Name	Part Name	Function	Comment
U551	RTR6275	UMTS/GSM Transceiver	TRX
SW1	KMS-507	Test Connector	Calibration, etc
U552	EUSY0207001	SPDT	ARIB
FL34	LMSP54MA-543	FEM (Front end Module)	FEM
X4	TG-5010LH-19.2MHz	VCTCXO	19.2MHz
U553	RFR6275	UMTS Receiver IC	RX
FL25	SAFE2G14FA0F0	UMTS2100 RX SAW filter	RX
FL105	EFCH881MTDAA	UMTS800 RX SAW filter	RX
FL18	EFSD835MF2S2	UMTS 800 Duplexer	TRX
FL35	SAYZY1G95EA0B00	UMTS 2100 Duplexer	TRX
U578	AWT6277R	UMTS 2100 PA	TX
U574	AWT6307R	UMTS 800 PA	TX
U558	CP0402A1950DNTR	UMTS 2100 coupler	TX
U557	CP0402A0836BNTR	UMTS 800 coupler	TX
FL24	SAFE1G95KA0F00	UMTS 2100 TX SAW Filter	TX
FL31	SFSY0030301	UMTS 800 TX SAW Filter	TX
U569	SMPY0008301	GSM PAM	TX
FL32	SFSY0030201	GSM TX SAW filter	TX

Table 6.1-1. RF Block Component

6. BLOCK DIAGRAM

6.2 Interface Diagram



L704i Interface Diagram

Main RF signal

GSM900 TX : GSM900 Tx RF signal

GSM900 RX : GSM900 Rx RF signal

DCS TX : DCS Tx RF signal

DCS RX : DCS Rx RF signal

PCS TX : PCS Tx RF signal

PCS RX : PCS Rx RF signal

UMTS 800 TX : UMTS 800 Tx RF signal

UMTS 800 RX : UMTS 800 Rx RF signal

UMTS 2100 TX : UMTS 2100 Tx RF signal

UMTS 2100 RX : UMTS 2100 Rx RF signal

TX_I/Q : I/Q for Tx of RF

RX_I/Q : I/Q for Rx of RF

Control signal

ANT_SEL 0,1,2 : Front End Module Mode Selection
(UMTS, GSM900 Tx/Rx, DCS Tx/Rx, PCS Tx/Rx)

GSM PA_CTL signal

GSM_PA_BAND : DCS or PCS /GSM Mode Selection

GSM_PA_EN : Power Amp Gain Control Enable

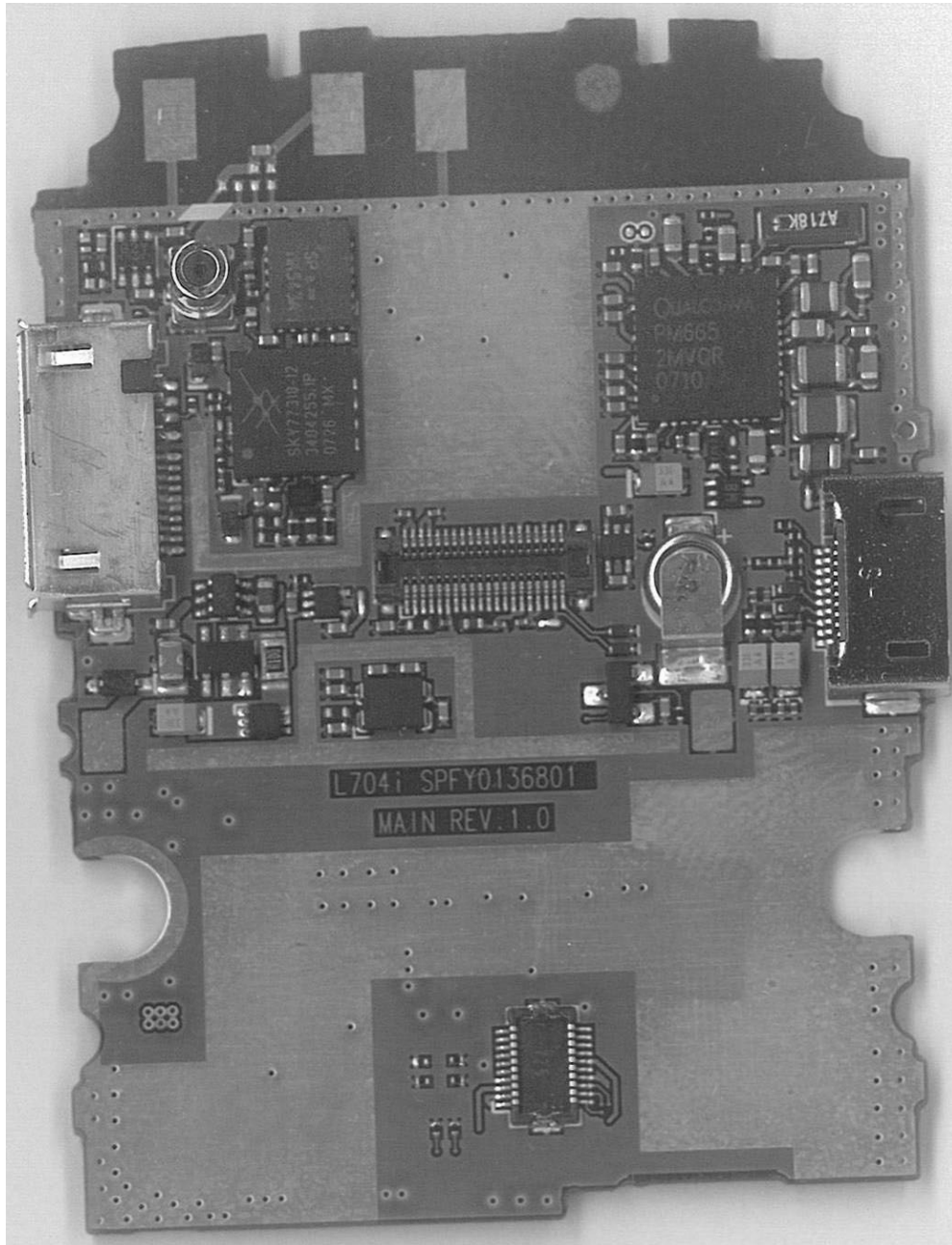
GSM_PA_RAMP : Power Amp Gain Control

UMTS PA_CTL signal

PA_ON1,2 : UMTS Tx Power Amp Enable

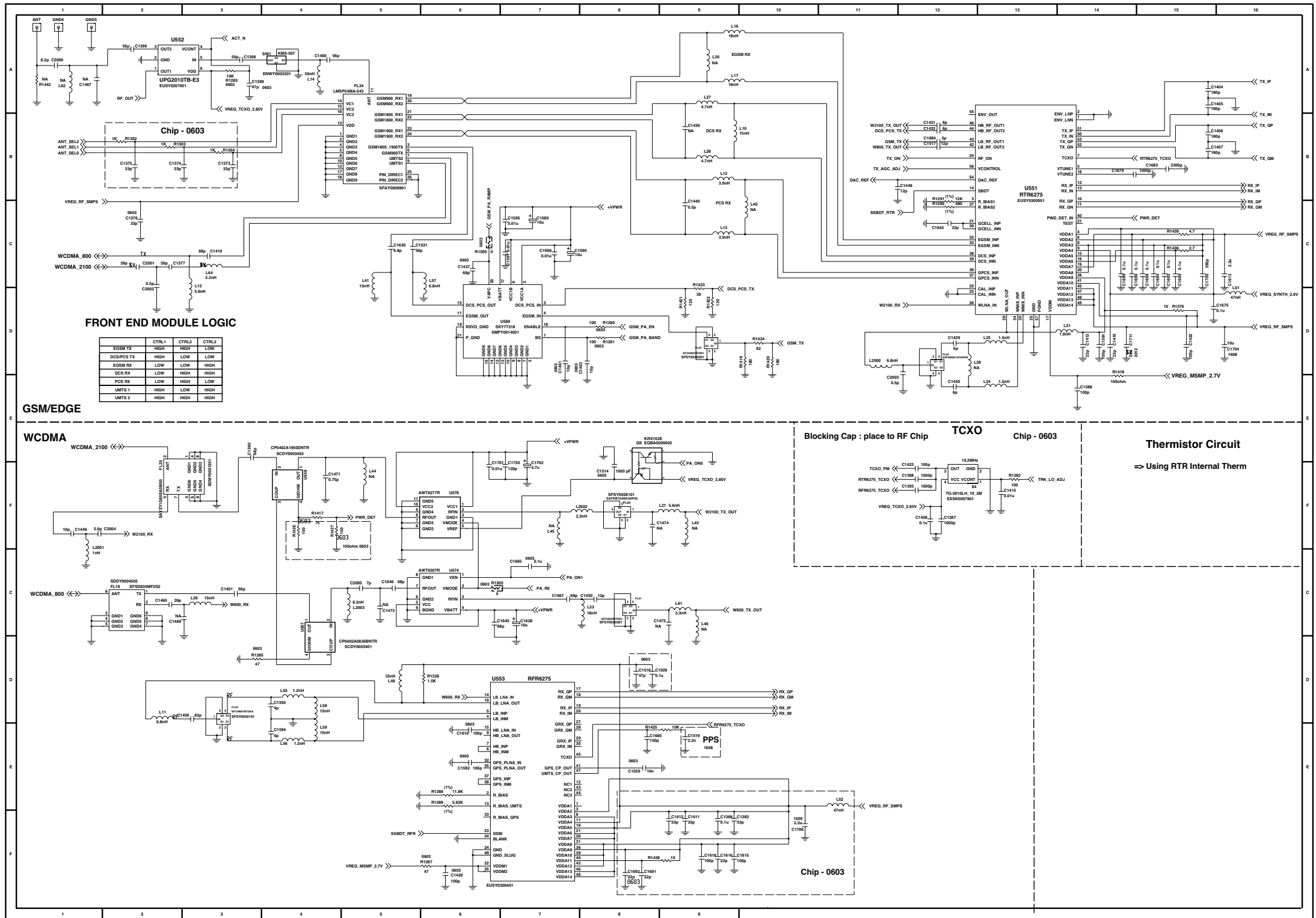
6. BLOCK DIAGRAM

***Top Side**

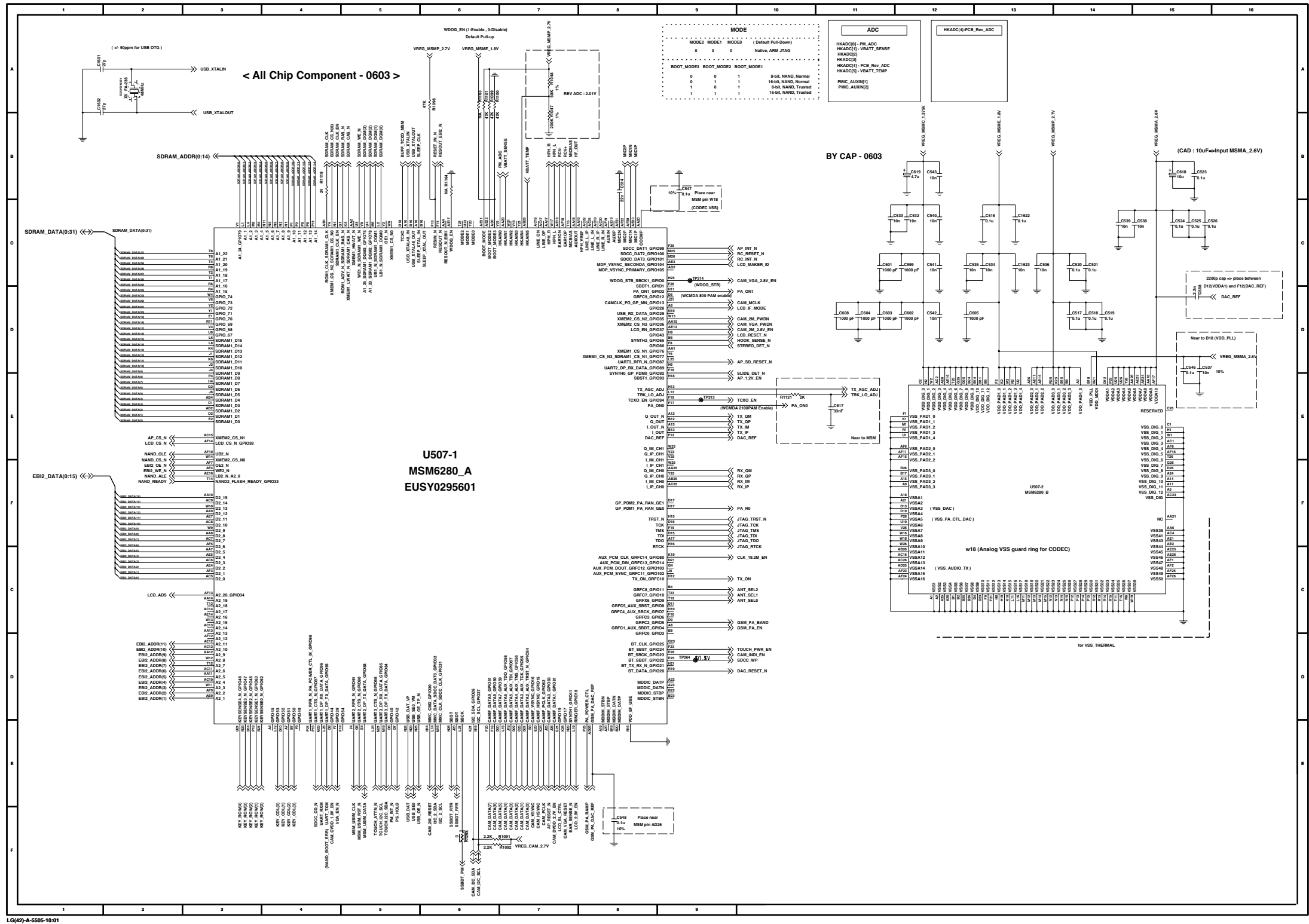




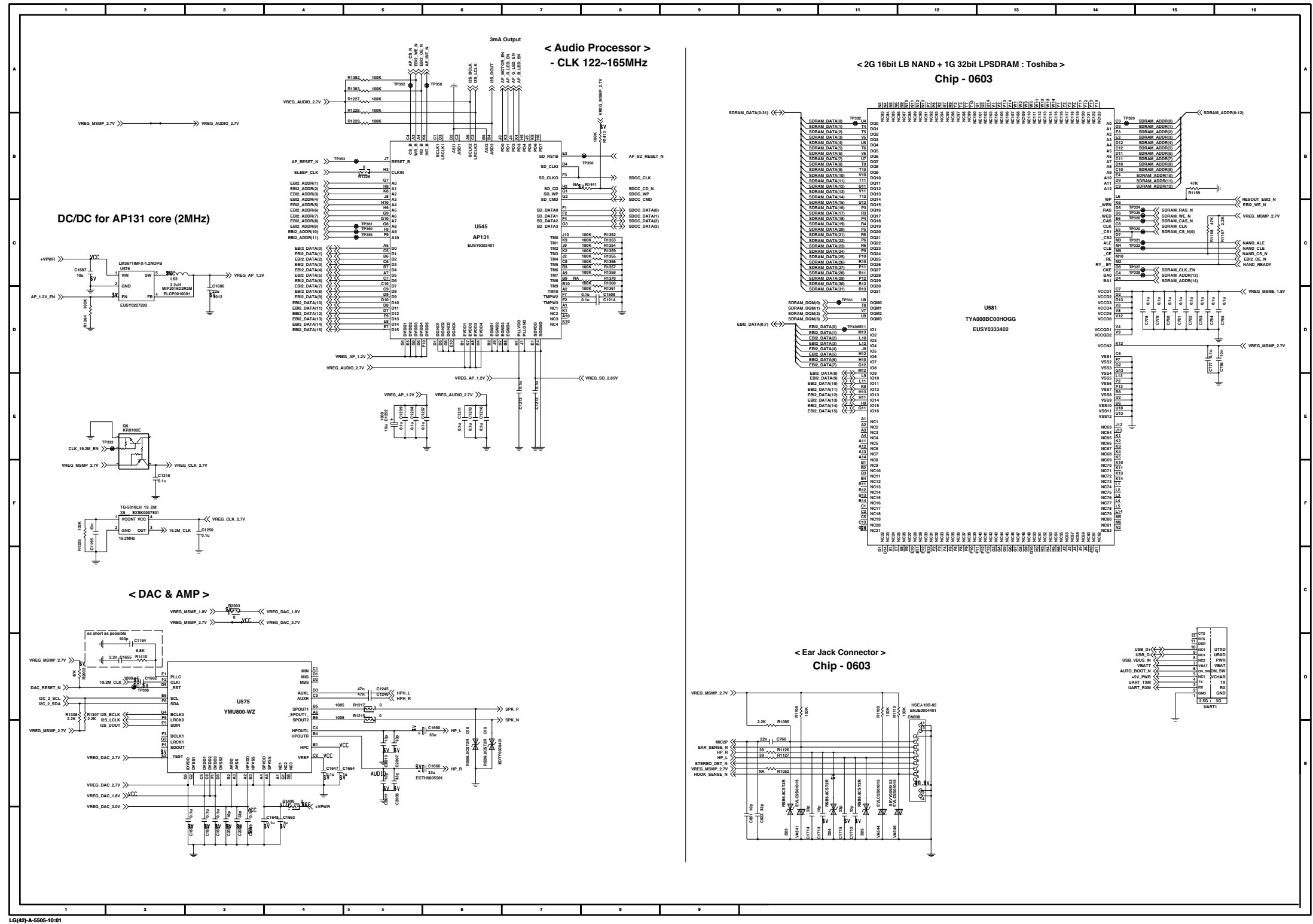
7. CIRCUIT DIAGRAM



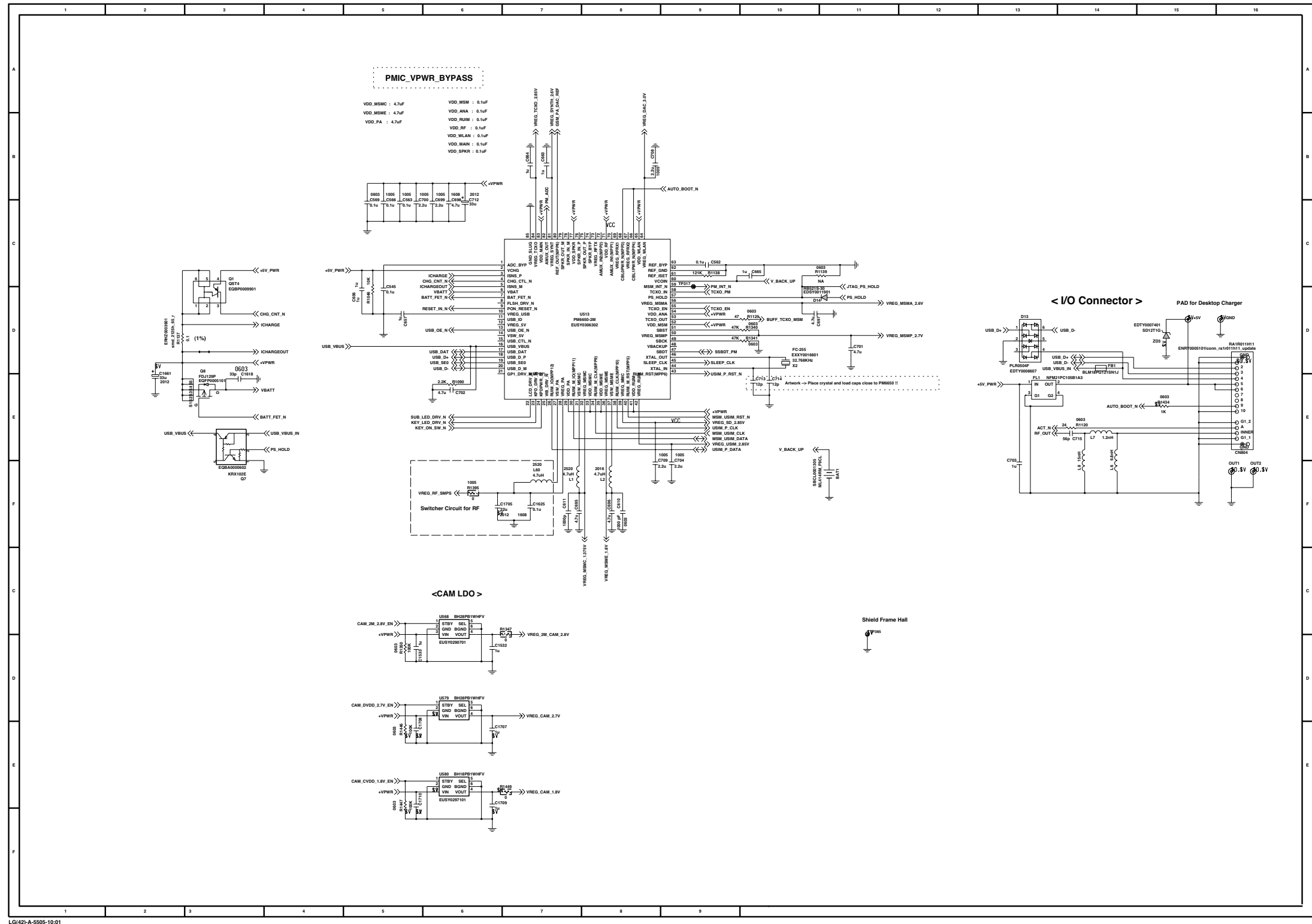
7. CIRCUIT DIAGRAM



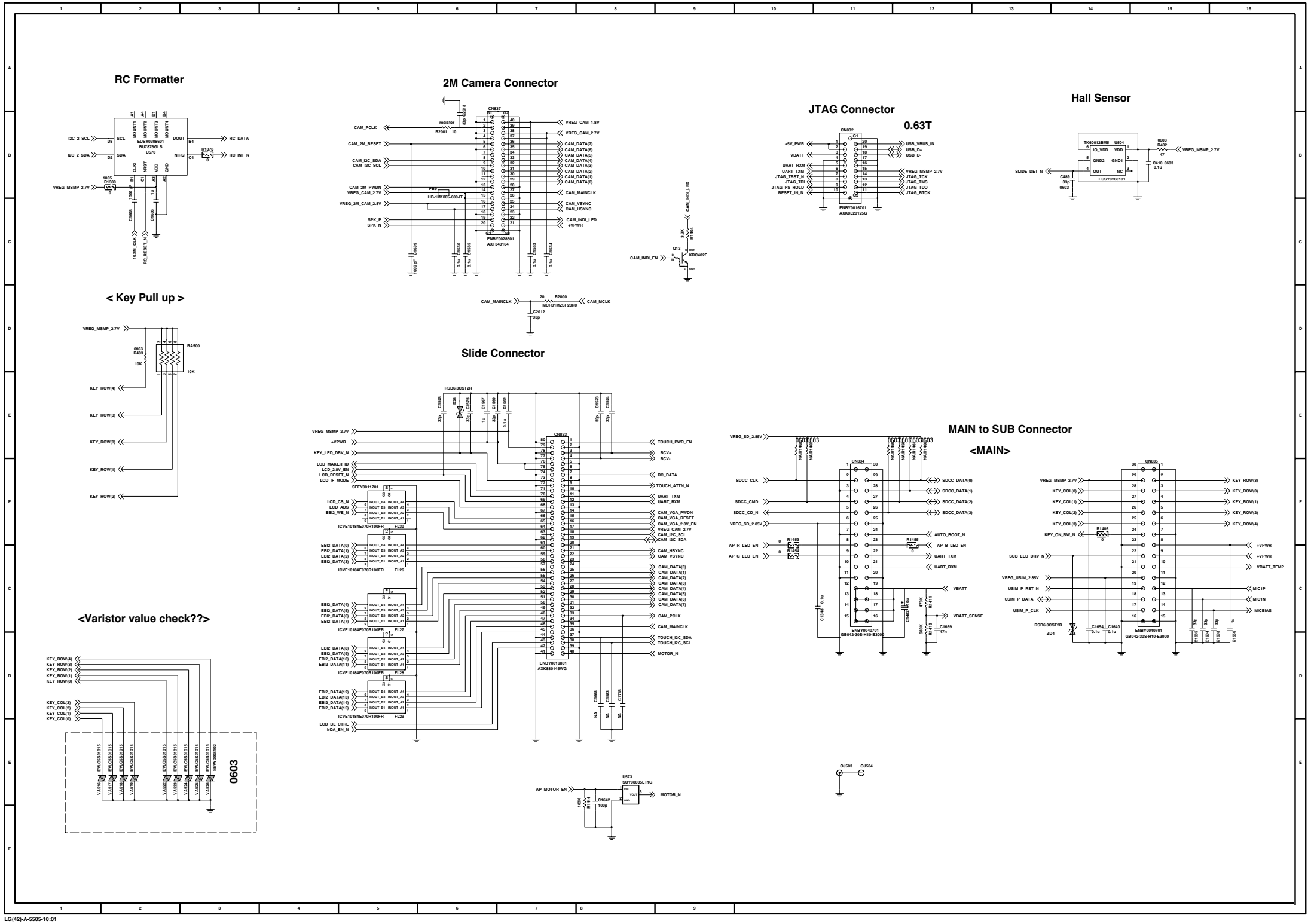
7. CIRCUIT DIAGRAM



7. CIRCUIT DIAGRAM

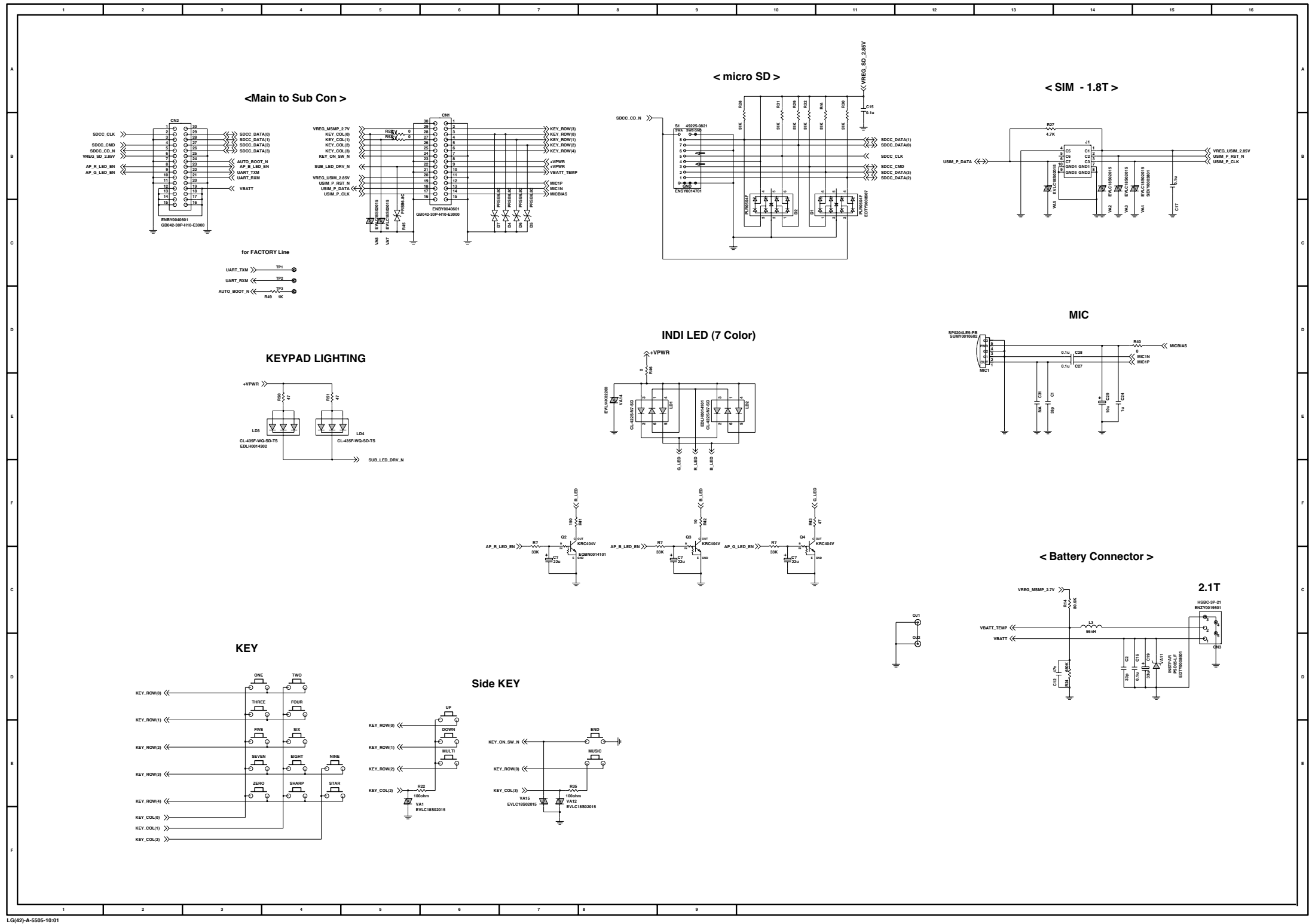


7. CIRCUIT DIAGRAM

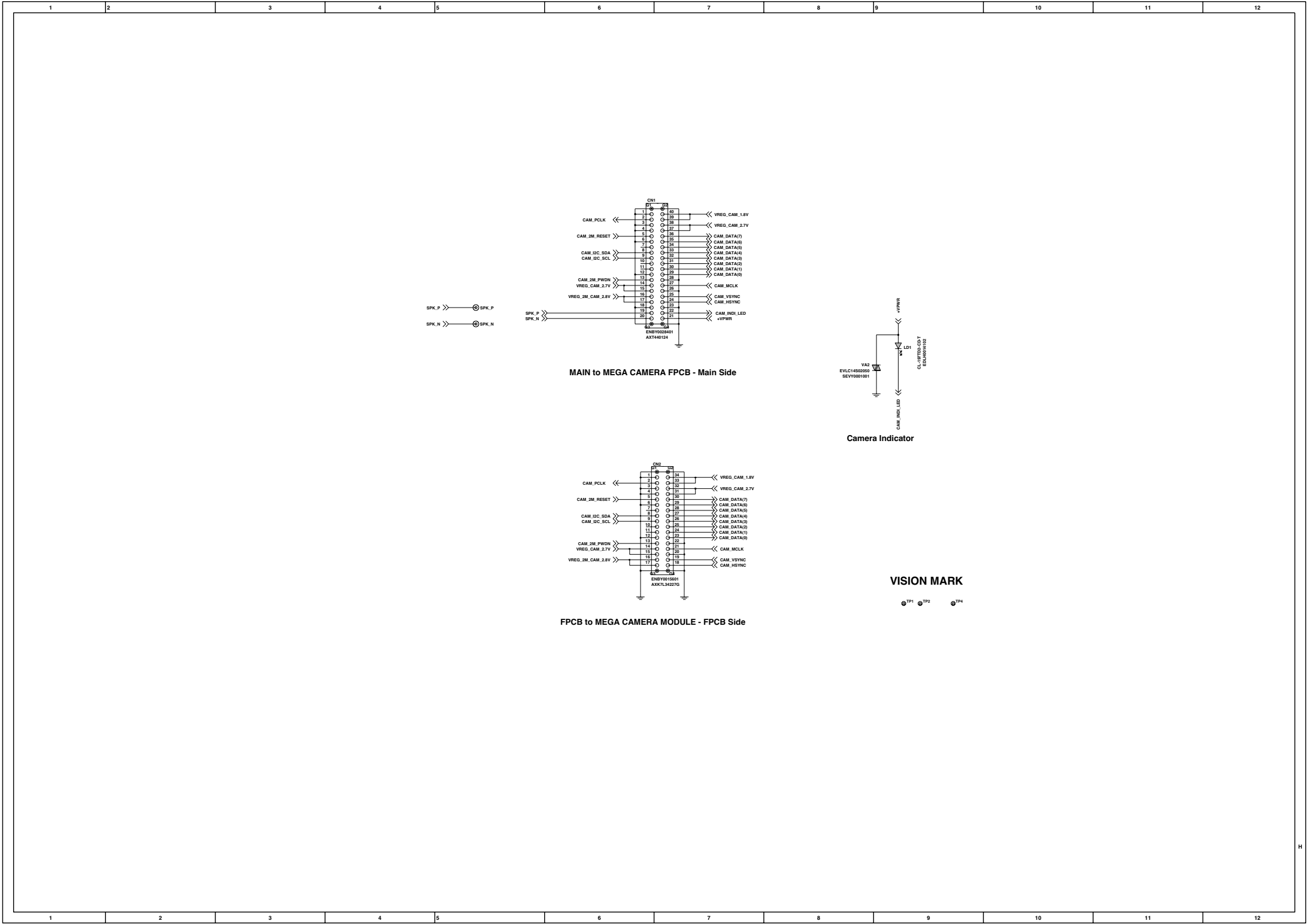


LG(42)-A-5505-10.01

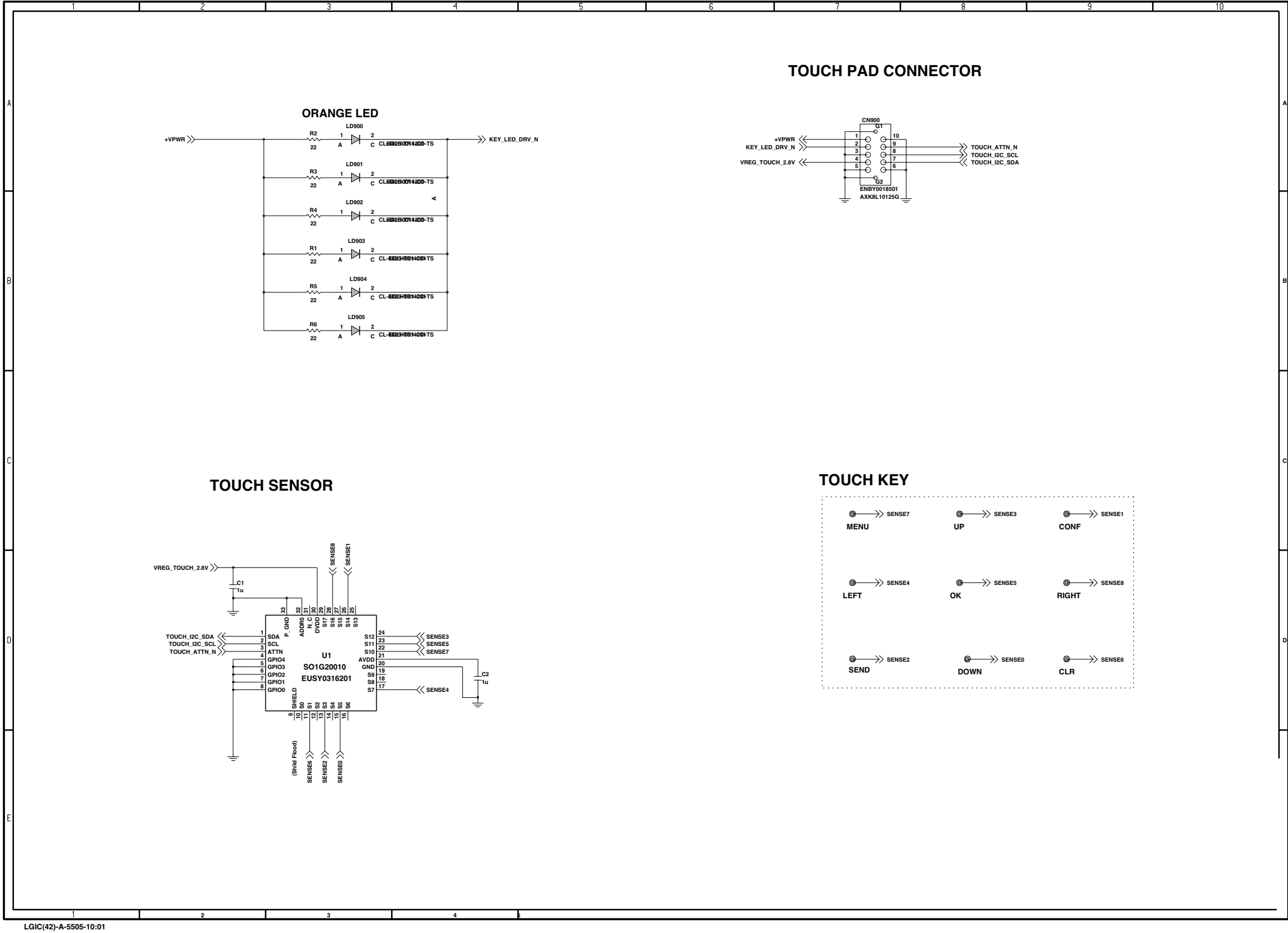
7. CIRCUIT DIAGRAM



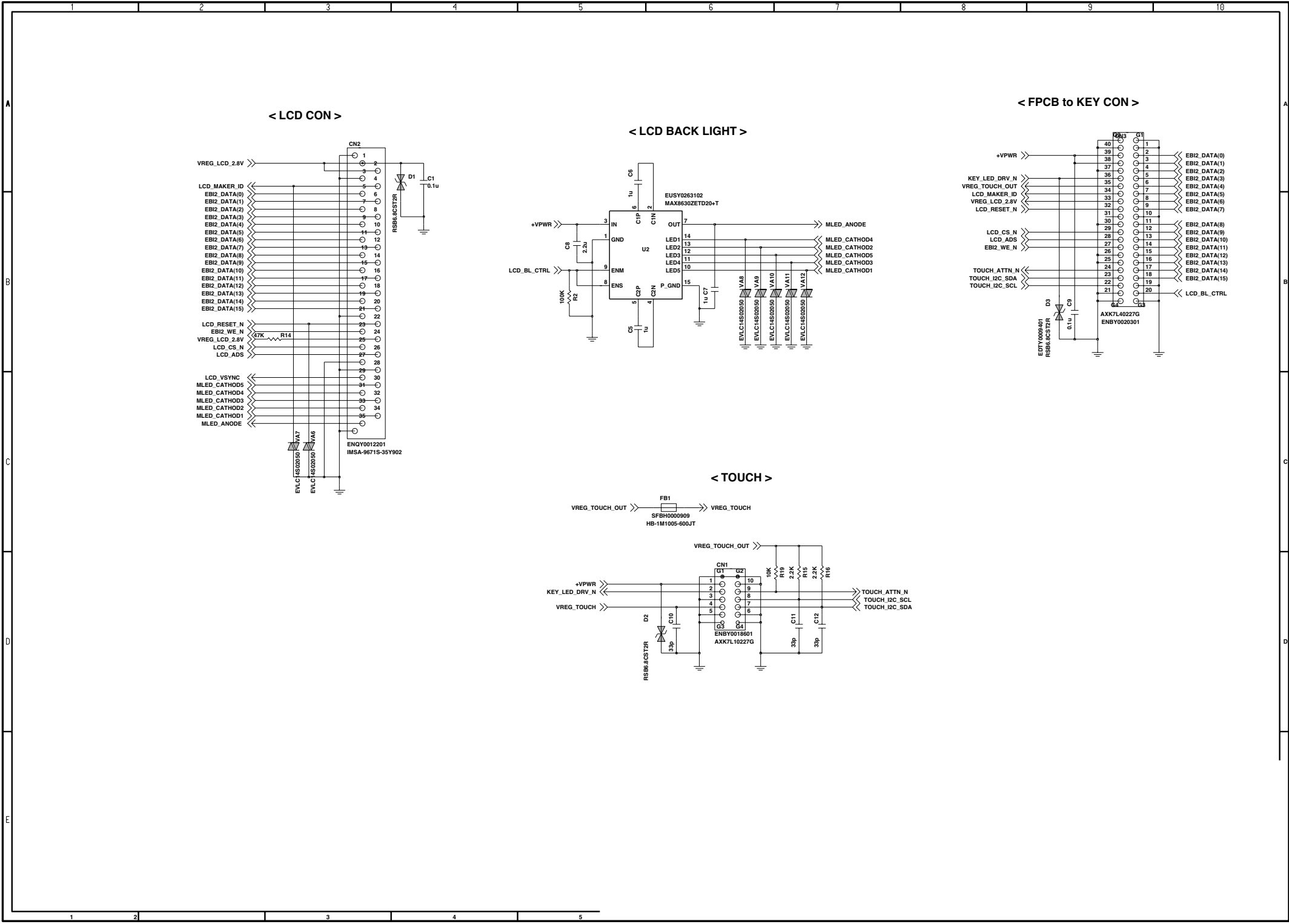
7. CIRCUIT DIAGRAM



7. CIRCUIT DIAGRAM

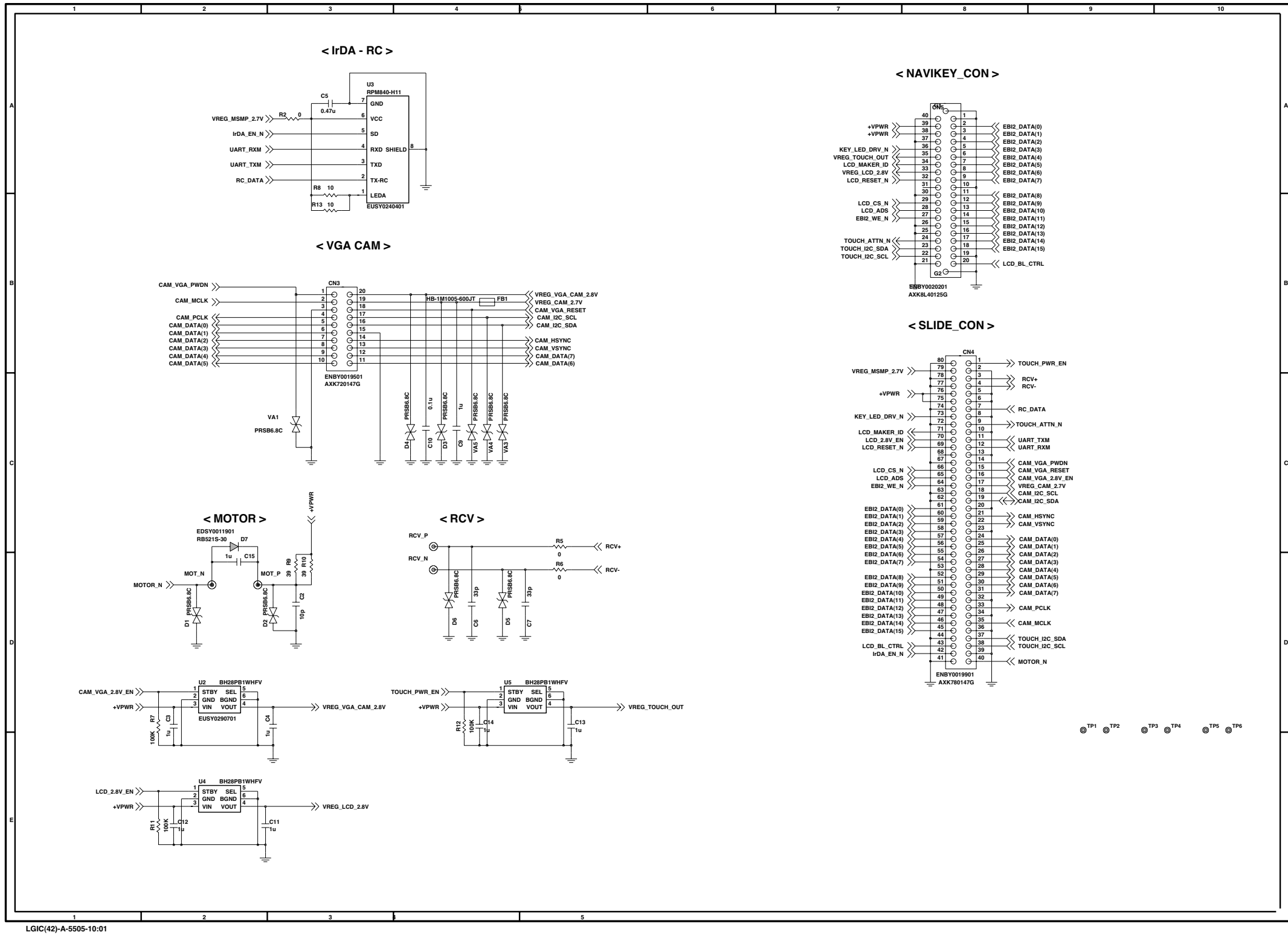


7. CIRCUIT DIAGRAM



LGIC<42>-A-5505-10:01

7. CIRCUIT DIAGRAM

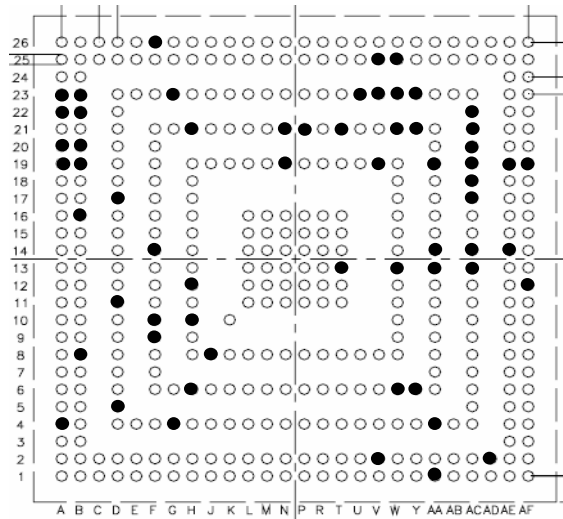


LGIC(42)-A-5505-10:01

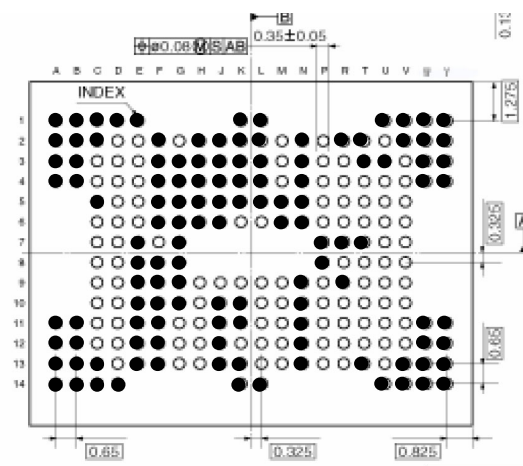
8. BGM Pin Map

1. MSM6280 (409 CSP land pattern drawing)

- USE
● NOT IN USE



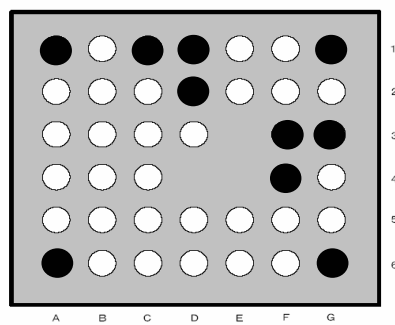
2. Memory (Bottom view)



8. BGM Pin Map

3. DAC

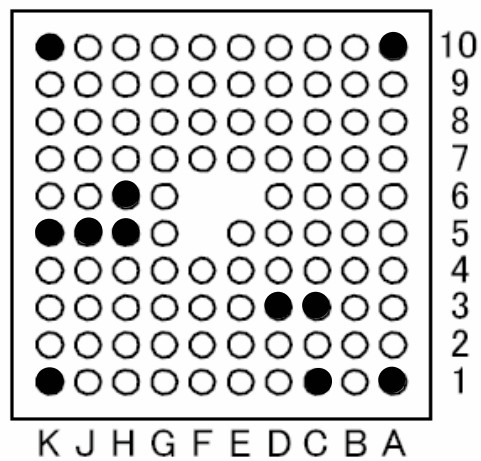
- USE
● NOT IN USE



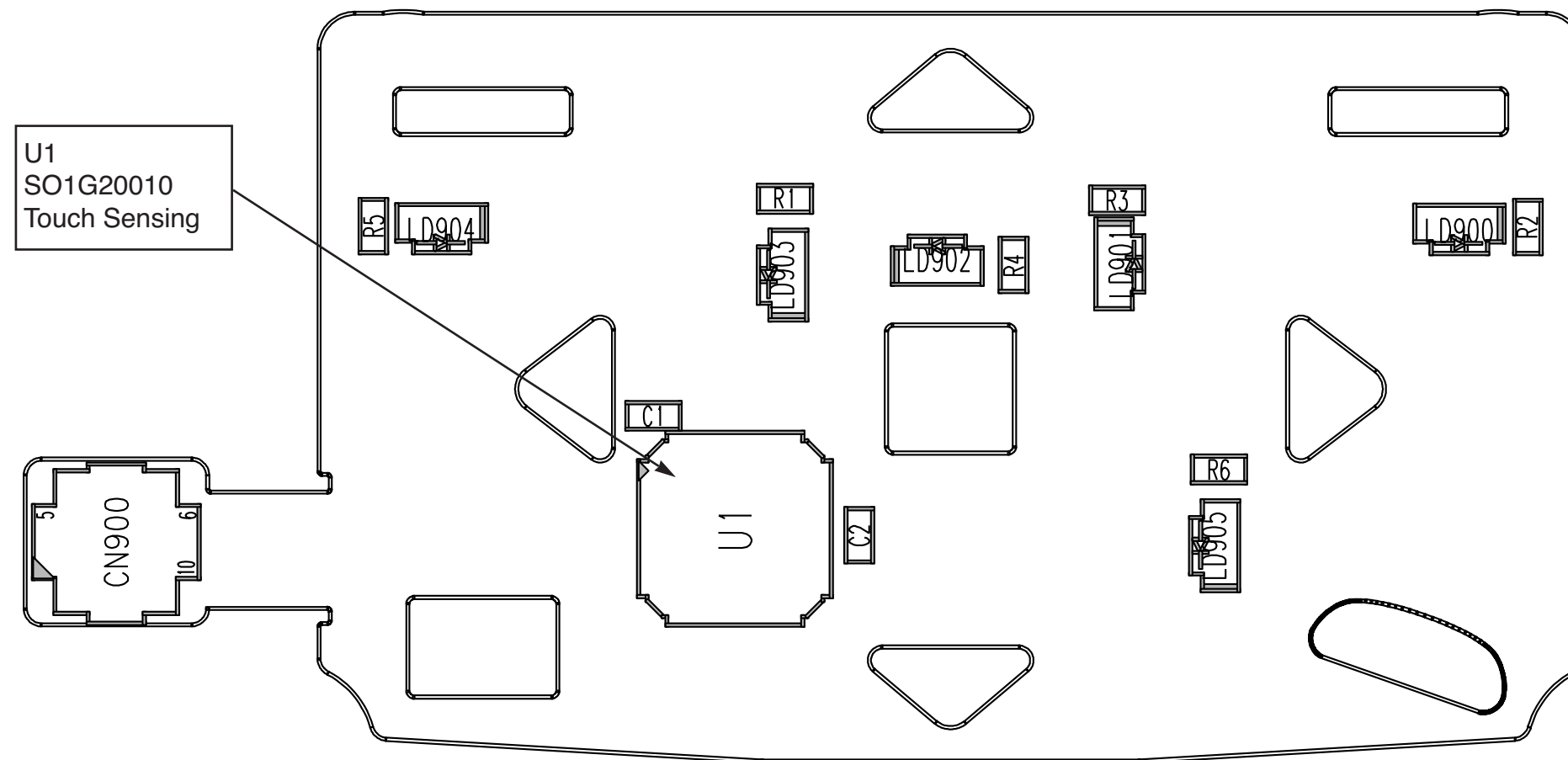
<39 balls WLCSP-Bottom View>

4. Audio Process

(Bottom View)

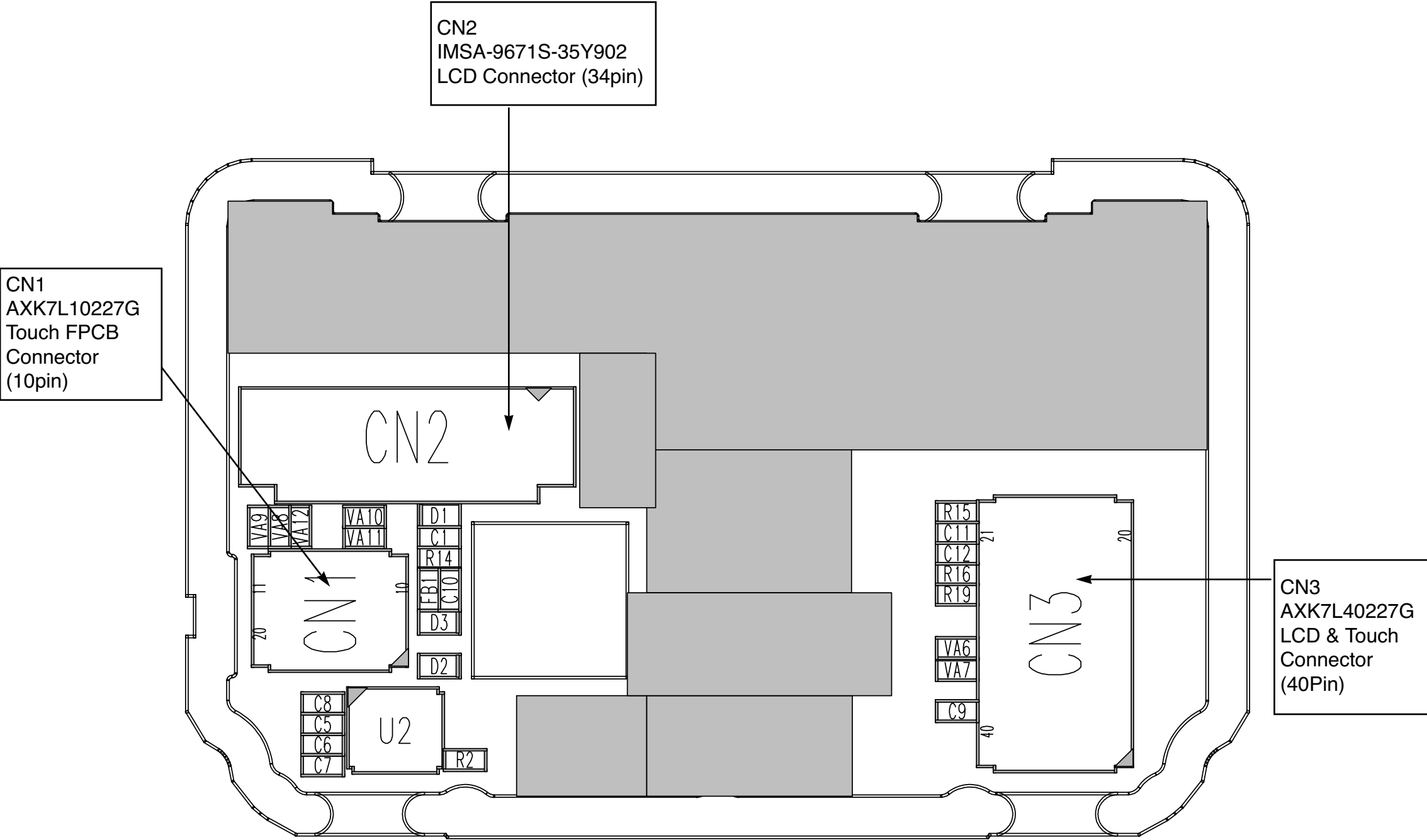


9. PCB LAYOUT



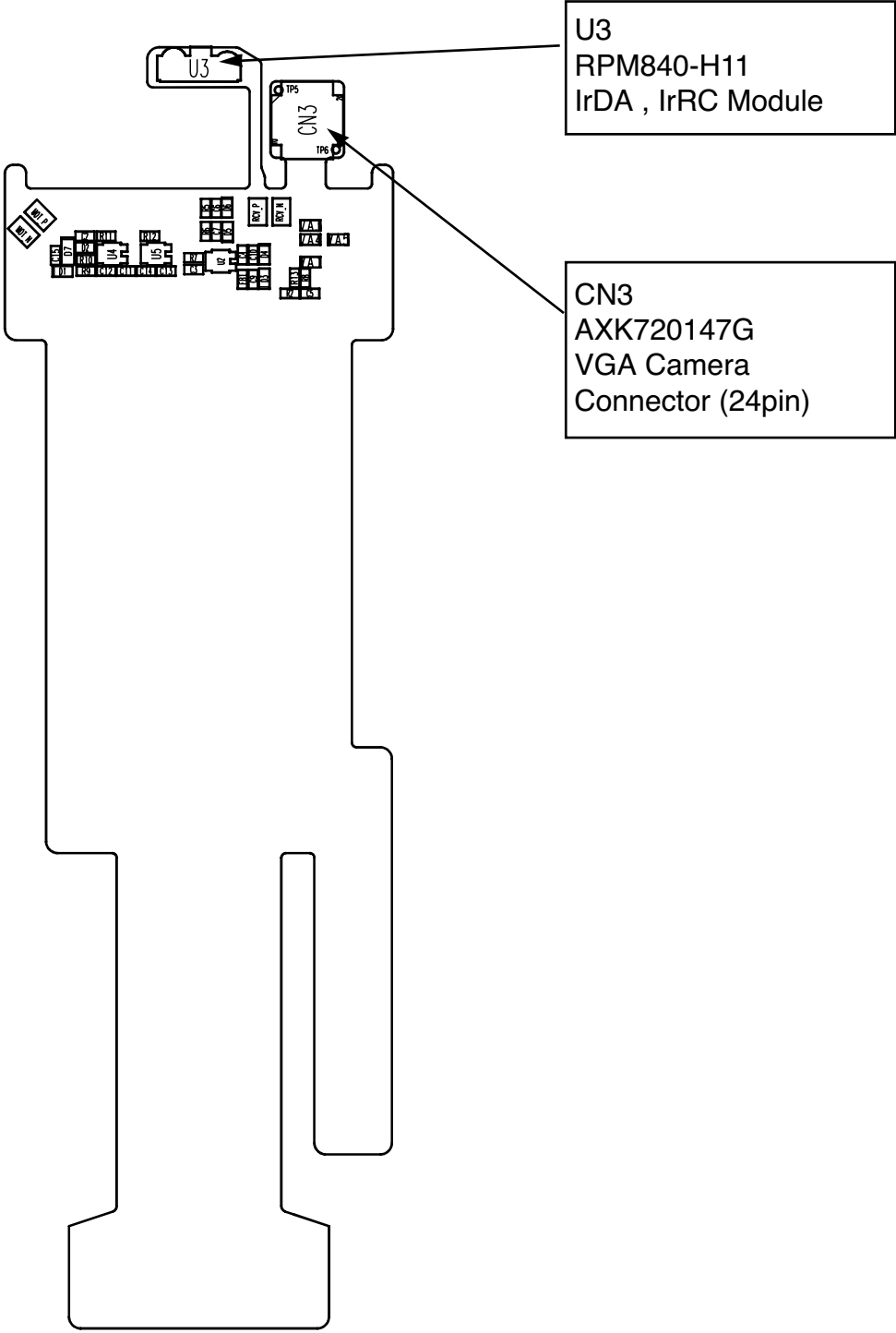
L704i-SPCY0093601-TOUCH-1.0 BTM

9. PCB LAYOUT



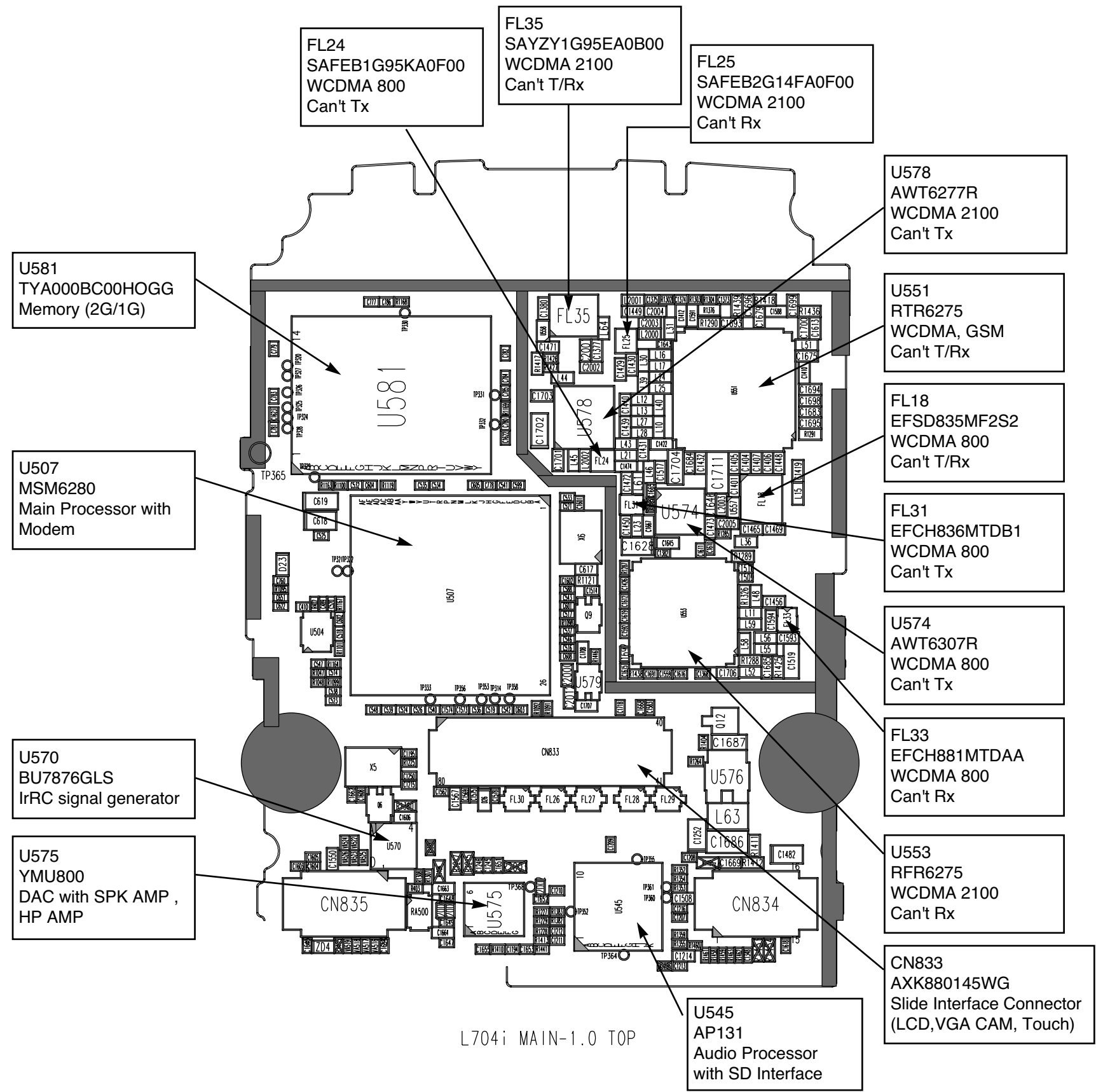
L704i-KEY-SPEY0045101-1.0-BOTTOM

9. PCB LAYOUT

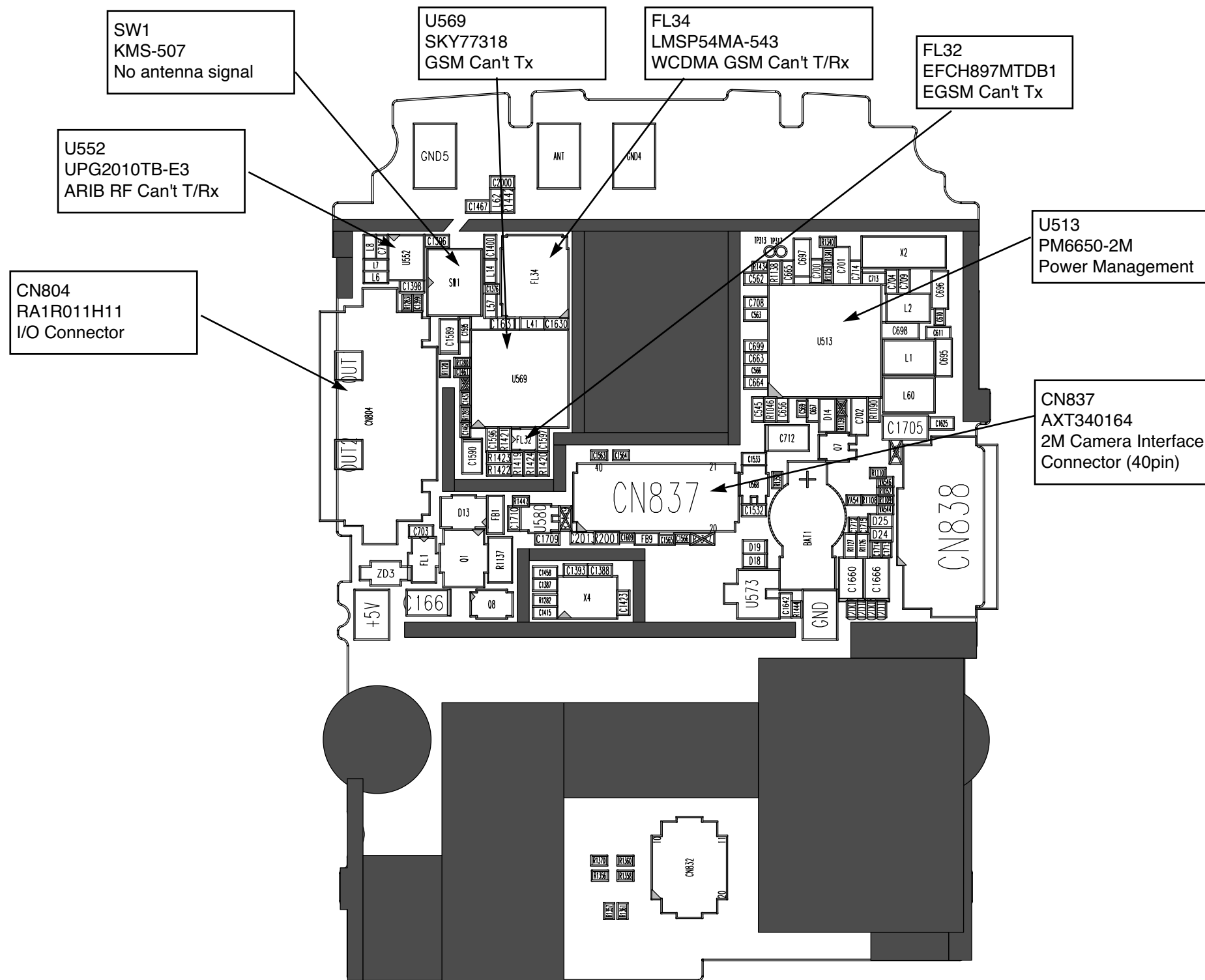


L704i-SPCY0086101-1.1-BOTTOM

9. PCB LAYOUT

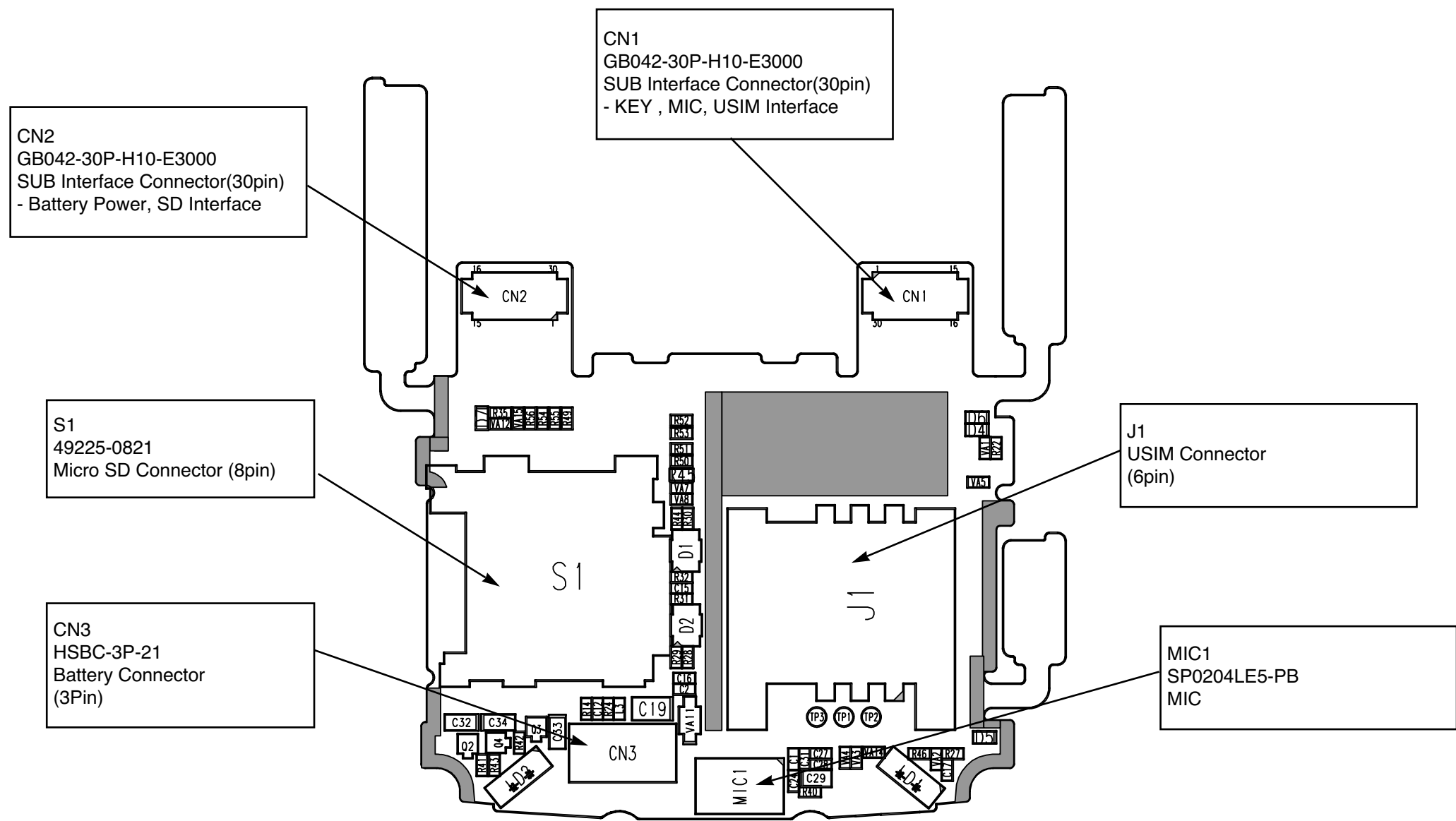


9. PCB LAYOUT



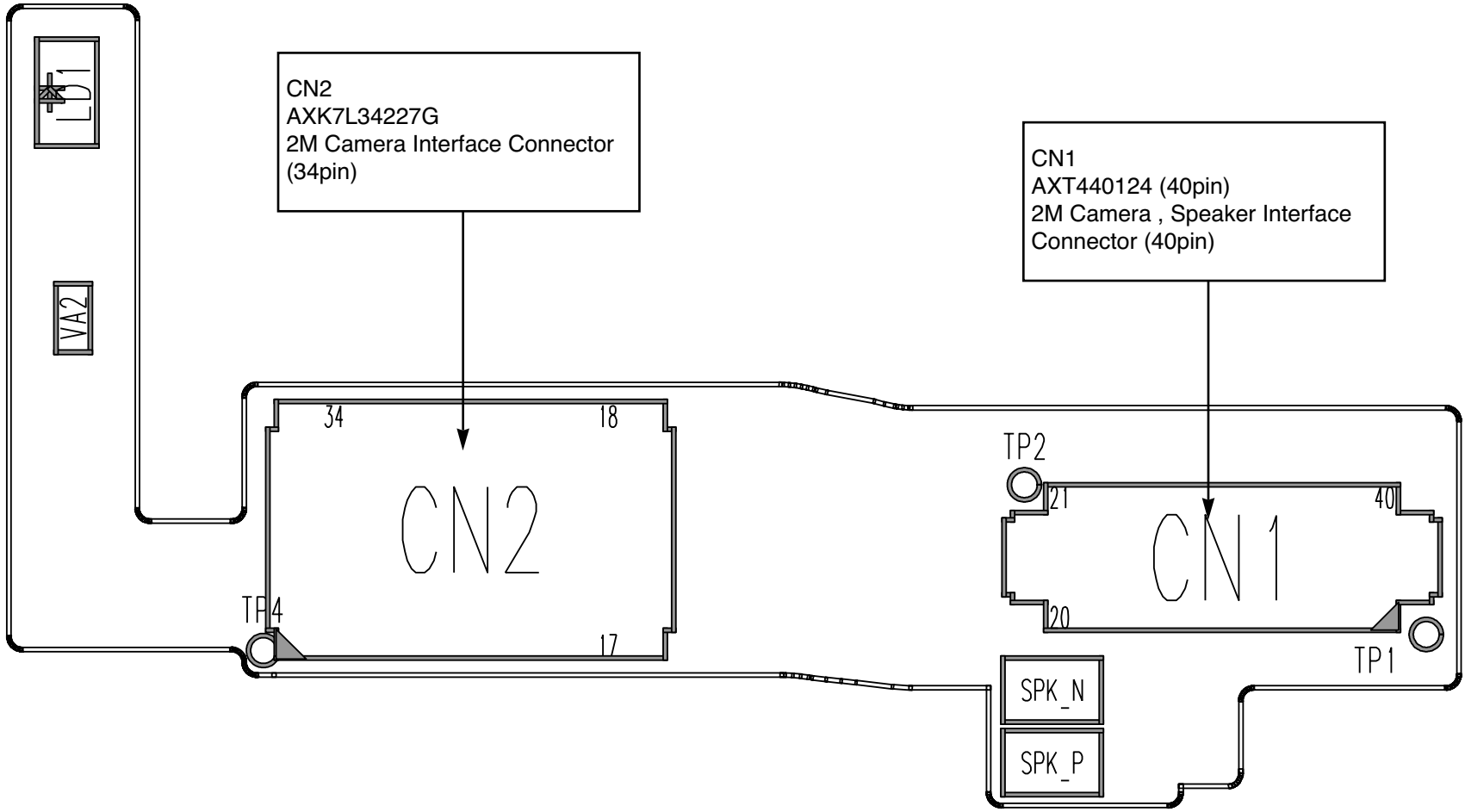
L704i MAIN-1.0 BOTTOM

9. PCB LAYOUT



L704 i -SPJY0034301-1.1-BTM

9. PCB LAYOUT

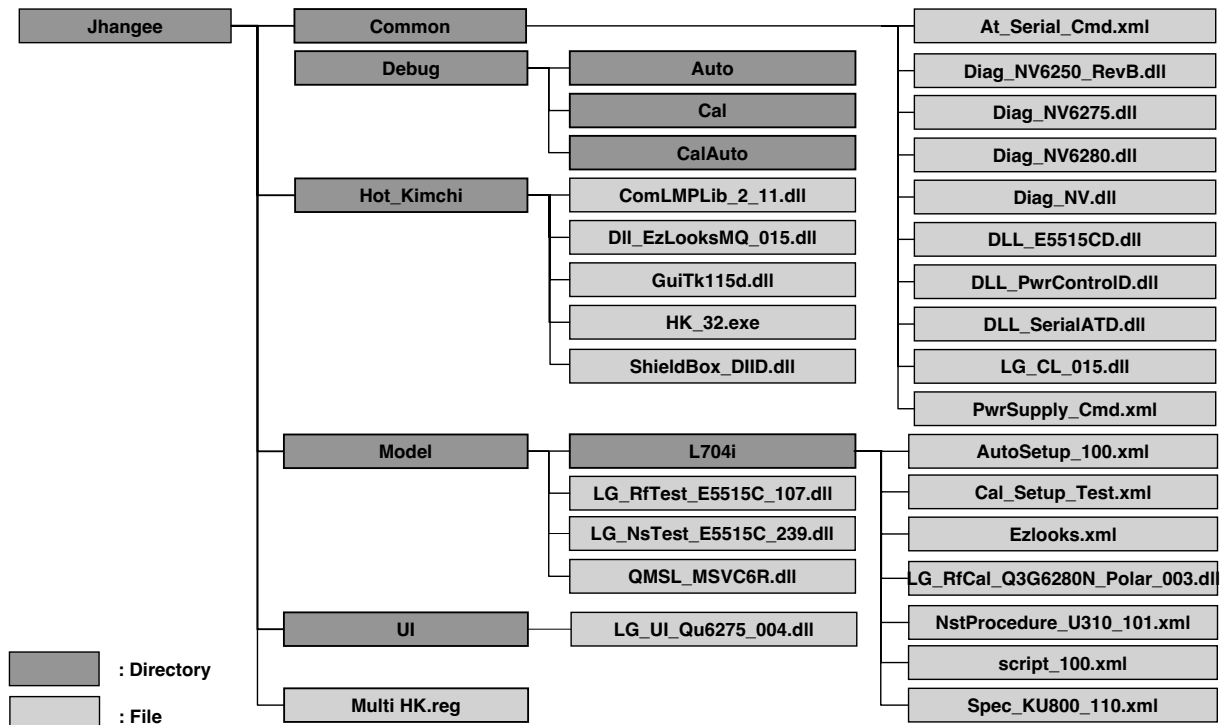


L704i-FCAM-1.0-TOP

10. Calibration & RF Auto Test Program (Hot Kimchi)

10.1 Configuration of HOT KIMCHI

10.1.1 Configuration of directory

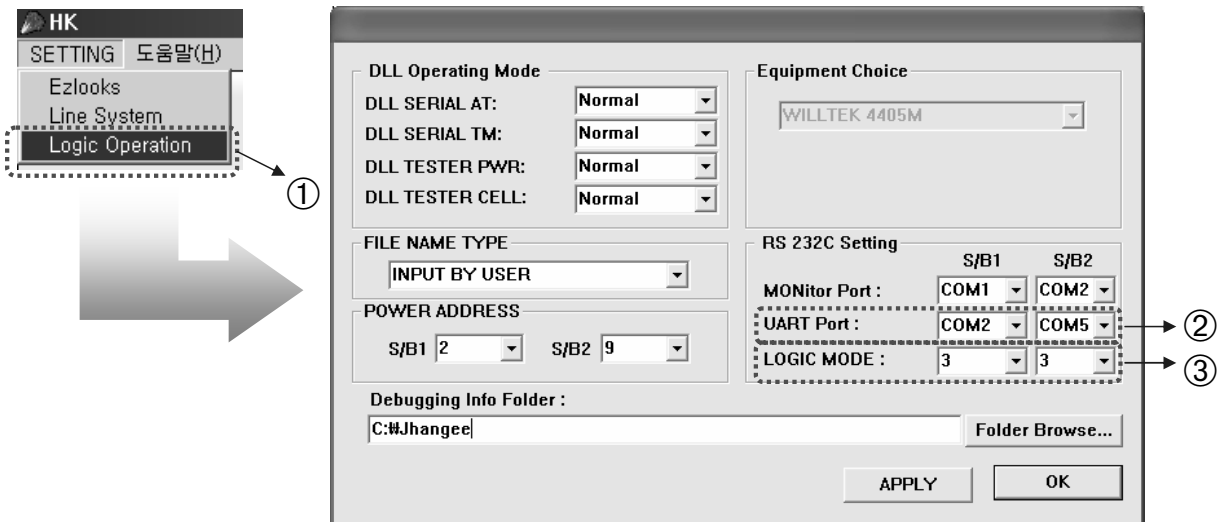


10. Calibration & RF Auto Test Program (Hot Kimchi)

10.1.2 Description of basic files

1. Cal_Setup_Test.xml : Parameter Setup File for Calibration items
2. NstProcudure_U310_101.xml : Scenario Setup File for Auto RF-Test
3. Spec_KU800_110.xml : Specification File of RF Test items
4. LG_RfCal_Q3G6280N_Polar_003.dll : RF Calibration DLL File including RF Calibration sequence functions
5. LG_NsTest_E5515C_239.dll : Auto RF-Test DLL File including RF Test sequence functions
6. DLL_E5515CD.DLL : GPIB DLL File including measuring functions in E5515CD Test Set

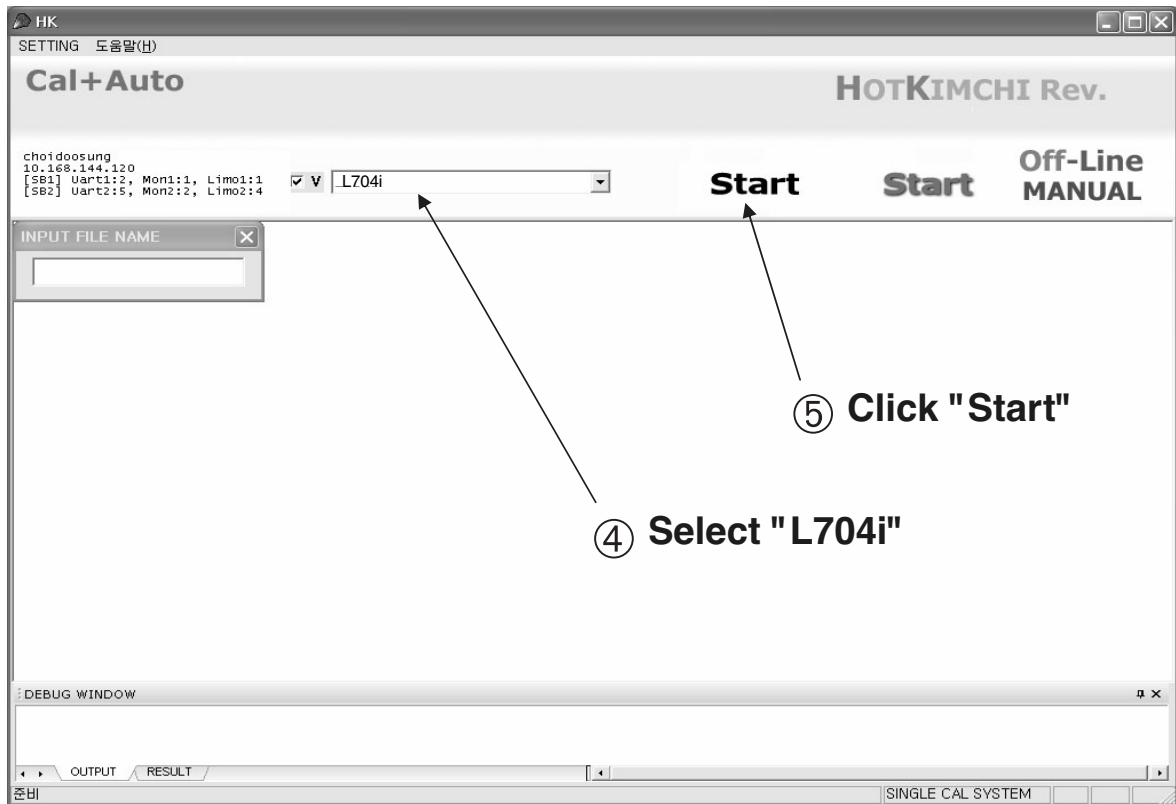
10.2 How to use HOT KIMCHI



* Procedure

1. Click "Logic Operation" of "SETTING" menu bar
 2. Select "UART Port" that PC can communicate with the phone
 3. Select "LOGIC MODE" that you want
- Logic Mode -> 1: Calibration Only
2: Auto Test Only
3: Calibration + Auto

10. Calibration & RF Auto Test Program (Hot Kimchi)



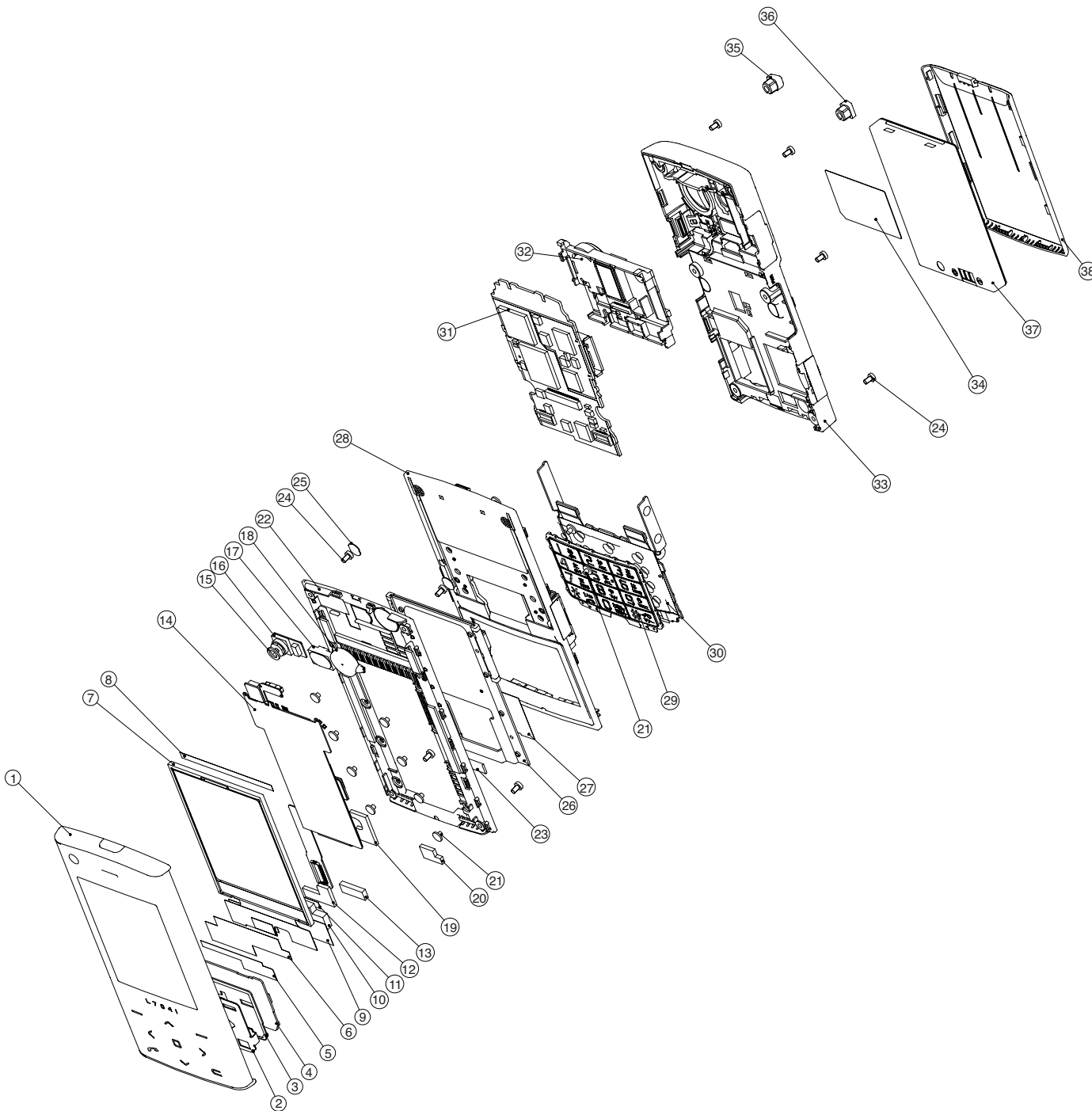
* Procedure

4. Select the model name "L704i"
5. Click "Start" button



11. EXPLODED VIEW & REPLACEMENT PART LIST

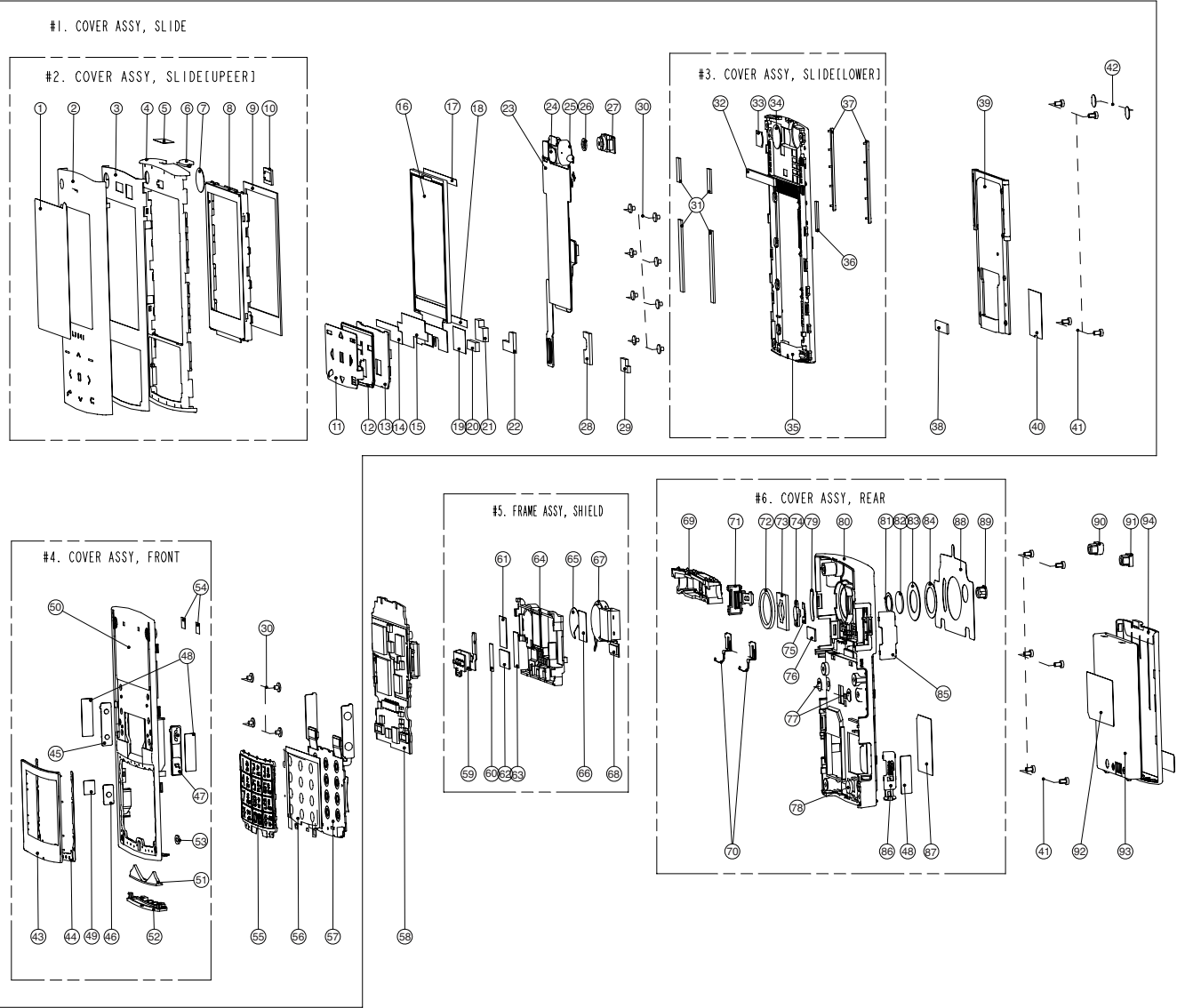
11.1 EXPLODED VIEW



The diagram illustrates the exploded view of a mobile phone, showing the following components labeled with numbers:

- 1: Front cover assembly (slide upper)
- 2: PCB, flexible (touch)
- 3: Plate, light guide (touch)
- 4: PCB, keypad
- 5: Tape, shield (PCB)
- 6: Tape, shield (LCD, 1)
- 7: LCD module
- 8: Tape, FPCB (LCD)
- 9: Tape, PRT (ZIP)
- 10: PAD (ZIP CONN., 2)
- 11: Tape, shield (LCD, 2)
- 12: PAD, FPCB (2)
- 13: PAD (ZIP CONN.)
- 14: PCB, flexible (slide)
- 15: PAD, camera (VGA)
- 16: Camera (VGA)
- 17: Receiver
- 18: Vibrator, motor
- 19: PAD, FPCB
- 20: PAD (LBD)
- 21: Screw, machine, bind
- 22: Cover assembly, slide (lower)
- 23: Gasket, shield foam (hinge)
- 24: Screw, machine, bind (*)
- 25: CAP, screw (slide)
- 26: Hinge assembly, slide
- 27: Tape, shield (hinge)
- 28: Cover assembly, front
- 29: Keypad assembly, dial
- 30: PCB assembly, sub
- 31: PCB, main
- 32: Frame assembly, shield
- 33: Cover assembly, rear
- 34: Label approval (1)
- 35: CAP, screw R
- 36: CAP, screw L
- 37: Battery pack, LI-Polymer
- 38: Cover, battery

40					
39					
38	COVER, BATTERY	I	MCJA00378##	01	02 03
37	BATTERY PACK, LI-POLYMER	I	SBPP0021901	01	02 03
36	CAP, SCREW L	I	MCCH00964##	01	02 03
35	CAP, SCREW R	I	MCCH00965##	01	02 03
34	LABEL APPROVAL [1]	I	MLAA0042202		
33	COVER ASSY, REAR	I	ACGM0082901		
32	FRAME ASSY, SHIELD	I	AFBA0005301		
31	PCB, MAIN	I	SAFY0217701		
30	PCB ASSY, SUB	I	SAJY0020701		
29	KEYPAD ASSY, DIAL	I	AKAZ00187##	01	02 03
28	COVER ASSY, FRONT	I	ACGK0081801		
27	TAPE, SHIELD [HINGE]	I	MTAC0055501		
26	HINGE ASSY, SLIDE	I	AHFB00021##	01	04 05
25	CAP, SCREW [SLIDE]	2	MCCH00969##	01	02 03
24	SCREW, MACHINE, BIND (*)	10	GMZZ0022402		
23	GASKET, SHIELD FOAM [HINGE]	I	MGAD0141201		
22	COVER ASSY, SLIDE [LOWER]	I	ACGR00088##	01	02 03
21	SCREW, MACHINE, BIND	12	GMZZ0020501		
20	PAD [LBD]	I	MPBZ0190301		
19	PAD, FPCB	I	MPBF0018401		
18	VIBRATOR, MOTOR	I	SJMY0008404		
17	RECEIVER	I	SURY0012801		
16	CAMERA (VGA)	I	SVCY0009101		
15	PAD, CAMERA [VGA]	I	MPBT0035201		
14	PCB, FLEXIBLE (SLIDE)	I	SACY0049901		
13	PAD [ZIP CONN.]	I	MPBU0009501		
12	PAD, FPCB [2]	I	MPBZ0162101		
11	TAPE, SHIELD [LCD, 2]	I	MTAC0051401		
10	PAD [ZIP CONN., 2]	I	MPBZ0177801		
9	TAPE, PRT [ZIP]	I	MTAB0202601		
8	TAPE, FPCB [LCD]	I	MTAJ0002601		
7	LCD MODULE	I	SVLM0021501		
6	TAPE, SHIELD [LCD, 1]	I	MTAC0051301		
5	TAPE, SHIELD [PCB]	I	MTAC0048401		
4	PCB, KEYPAD	I	SAEY0052501		
3	PLATE, LIGHT GUIDE [TOUCH]	I	MPFL0001201		
2	PCB, FLEXIBLE (TOUCH)	I	SACY0052001		
1	COVER ASSY, SLIDE [UPPER]	I	ACGS00100##	01	02 03
NO.	DESCRIPTION	Q'TY	DRAWING NO.	BC	WT IC
					COLOR



02	NTTBC	BLACK
03	NTTWT	WHITE
04	NTTIC	WINE RED

98						49	TAPE,PROTECTION[SIDEKEY 2]	1	MTAB0159601				
97						48	TAPE,PROTECTION[SIDEKEY]	3	MTAB0142201				
96						47	BUTTON,SIDE[R]	1	MBJL00370##	01	02	03	
95						46	BUTTON,SIDE[L(2)]	1	MBJL00371##	01	02	03	
94	COVER, BATTERY	1	MCJA00378##	01	02	03	45	BUTTON,SIDE [L]	1	MBJL00369##	01	02	03
93	BATTERY PACK,LI-POLYMER	1	SBPP0021901				44	TAPE,DECO[FRONT2]	1	MTAZ0168201			
92	LABEL APPROVAL [1]	1	MLAA0042202				43	DECO,FRONT[2]	1	MDAG00243##	01	02	03
91	CAP, SCREW L	1	MCCH00964##	01	02	03	42	CAP,SCREW[SLIDE]	2	MCCH00969##	01	02	03
90	CAP, SCREW R	1	MCCH00965##	01	02	03	41	SCREW, MACHINE, BIND(*)	10	GMZZ0022402			
89	CAP, MOBILE S/W	1	MCCF00408##	01	02	03	40	TAPE,SHIELD[HINGE]	1	MTAC0055501			
88	TAPE,PROTECTION[CAMERA WINDOW]	1	MTAB0142501				39	HINGE ASSY,SLIDE	1	AHFB00021##	01	04	05
87	LABEL, APPROVAL [2]	1	MLAA0049301				38	GASKET,SHIELD FOAM[HINGE]	1	MGAD0141201			
86	CAP, MULTIMEDIA CARD	1	MCCG00071##	01	02	03	37	DECO [SLIDE]	2	MDAY00346##	01	02	03
85	CAP, RECEPTACLE	1	MCCF00339##	01	02	03	36	MAGNET	1	MMAZ0004301			
84	DECO, CAMERA	1	MDAD0027301				35	COVER, SLIDE [LOWER]	1	MCJV00089##	01	02	03
83	TAPE, DECO [CAMERA]	1	MTAA0127401				34	PAD, MOTOR	1	MPBJ0038401			
82	WINDOW, CAMERA	1	MWAE0022201				33	PAD, RECEIVER	1	MPBM0020501			
81	TAPE, WINDOW [CAMERA]	1	MTAD0060801				32	PAD [SOUND, LOWER]	1	MPBZ0189901			
80	COVER, REAR	1	MCJN00610##	01	02	03	31	PAD [LOWER]	2	MPBZ0159001			
79	FILTER, SPEAKER	1	MFBG0027201				30	SCREW,MACHINE,BIND	12	GMZZ0020501			
78	LABEL, A/S[2]	1	MLAB0003501				29	PAD[LBD]	1	MPBZ0190301			
77	LABEL, A/S[1]	2	MLAB0003001				28	PAD,FPCB	1	MPBF0018401			
76	PAD [B2B 24PIN]	1	MPBZ0128901				27	CAMERA (VGA)	1	SVCY0009101			
75	TAPE, WINDOW [LED]	1	MTAD0061301				26	PAD,CAMERA[VGA]	1	MPBT0035201			
74	WINDOW, LED	1	MWAD0006301				25	VIBRATOR,MOTOR	1	SJMY0008404			
73	PAD, CAMERA	1	MPBT0035301				24	RECEIVER	1	SURY0012801			
72	PAD, SPEAKER	1	MPBN0036201				23	PCB, FLEXIBLE (SLIDE)	1	SACY0049901			
71	CAP, EARPHONE JACK	1	MCCC00412##	01	02	03	22	PAD, FPCB [2]	1	MPBZ0162101			
70	TERMINAL, PIN	2	MTCB0010401				21	PAD[ZIP CONN.,2]	1	MPBZ0177801			
69	Antenna,GSM,FIXED	1	SNGF0027701				20	PAD[ZIP CONN.]	1	MPBU0009501			
68	CAMERA (2M)	1	SVCY0012401				19	TAPE, PRT [ZIP]	1	MTAB0202601			
67	SPEAKER	1	SUSY0025601				18	TAPE,SHIELD[LCD,2]	1	MTAC0051401			
66	TAPE[2M CAMERA]	1	MTAZ0166601				17	TAPE,FPCB[LCD]	1	MTAJ0002601			
65	TAPE[SPEAKER]	1	MTAZ0166501				16	LCD MODULE	1	SVLM0021501			
64	FRAME, SHIELD	1	MFEA0012901				15	TAPE,SHIELD[LCD,1]	1	MTAC0051301			
63	GASKET[ARIB 1/0]	1	MGAZ0054401				14	TAPE,SHIELD[PCB]	1	MTAC0048401			
62	PAD[B TO B,40PIN]	1	MPBZ0169001				13	PCB,KEYPAD	1	SAEY0052501			
61	TAPE,SHIELD	1	MTAC0048101				12	PLATE,LIGHT GUIDE[TOUCH]	1	MPFL0001201			
60	GASKET[EARJACK]	1	MGAZ0054501				11	PCB,FLEXIBLE (TOUCH)	1	SACY0052001			
59	PCB,FLEXIBLE (CAM)	1	SACY0052301				10	FILTER, RECEIVER	1	MFBG0019301			
58	PCB, MAIN	1	SAFY0217701				9	PAD, LCD	1	MPBG0053501			
57	PCB, SUB	1	SAJY0020701				8	BRACKET, LCD	1	MBFF0011601			
56	DOME ASSY, METAL	1	ADCA0060001				7	TAPE, MOTOR	1	MTAF0010101			
55	KEYPAD ASSY, DIAL	1	AKAZ00187##	01	02	03	6	WINDOW, IRDA	1	MWAG0014201			
54	TAPE,PROTECTION[SOUND]	2	MTAB0190701				5	TAPE,PROTECTION[IRDA]	1	MTAB0142301			
53	FILTER, MIKE	1	MFBG0019201				4	COVER, SLIDE [UPPER]	1	MCJW00105##	01	02	03
52	DECO, FRONT[1]	1	MDAG00242##	01	02	03	3	TAPE, WINDOW LCD	1	MTAD0060701			
51	PLATE, LIGHT GUIDE	1	MPFL0001401				2	WINDOW ASSY, LCD	1	AWAB00250##	01	02	03
50	COVER, FRONT	1	MCJK00659##	01	02	03	1	TAPE,PROTECTION[WINDOW]	1	MTAB0201301			
NO.	DESCRIPTION	Q'TY	DRAWING NO.	BC	WT	IC	NO.	DESCRIPTION	Q'TY	DRAWING NO.	BC	WT	IC
						COLOR							

11. EXPLODED VIEW & REPLACEMENT PART LIST

11.2 Replacement Parts <Mechanic component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
1		IMT-2000(SLIDE)	TISL0000702			
2	AAAY00	ADDITION	AAAY0215301		Without Color	
4	MCJN00	COVER,REAR	MCJN0061001	MOLD, PC LUPOY SC-1004A, , , , ,	Black	
4	MDAD00	DECO,CAMERA	MDAD0027301	PRESS, STS, 0.3, , , ,	Silver	
4	MFBC00	FILTER,SPEAKER	MFBC0027201	COMPLEX, (empty), , , , ,	Without Color	
4	MLAA00	LABEL,APPROVAL	MLAA0049301	COMPLEX, (empty), , , , ,	Without Color	
4	MLAB00	LABEL,A/S	MLAB0003001	COMPLEX, (empty), 0.15, , , ,	Without Color	
4	MLAB01	LABEL,A/S	MLAB0003501	COMPLEX, (empty), , , , ,	Without Color	
4	MPBN00	PAD,SPEAKER	MPBN0036201	COMPLEX, (empty), , , , ,	Black	
4	MPBT00	PAD,CAMERA	MPBT0035301	COMPLEX, (empty), , , , ,	Black	
4	MPBZ00	PAD	MPBZ0128901	CUTTING, NS, , , , ,	Without Color	
4	MTAA00	TAPE,DECO	MTAA0127401	COMPLEX, (empty), , , , ,	Without Color	
4	MTAB00	TAPE,PROTECTION	MTAB0142501	COMPLEX, (empty), , , , ,	Without Color	
4	MTAB02	TAPE,PROTECTION	MTAB0142201	COMPLEX, (empty), , , , ,	Without Color	
4	MTAD00	TAPE,WINDOW	MTAD0060801	COMPLEX, (empty), 0.2, , , ,	Without Color	
4	MTAD01	TAPE,WINDOW	MTAD0061301	COMPLEX, (empty), , , , ,	Without Color	
4	MTCB00	TERMINAL,PIN	MTCB0010401	PRESS, BeCu, 0.15mm, , , ,	Gold	
4	MWAD00	WINDOW,LED	MWAD0006301	MOLD, PC LEXAN 141R, , , , ,	Transparent	
4	MWAE00	WINDOW,CAMERA	MWAE0022201	CUTTING, PMMA MR 200, , , , ,	Transparent	
4	SNGF00	ANTENNA,GSM,FIXED	SNGF0027701	3.0 ,-2.0 dBd ,EGMS+DCS+PCS+W-BAND I+W-BAND VI, INTERNAL ,; ,MULTI ,-2.0 ,50 ,3.0		
3	ACGQ00	COVER ASSY,SLIDE	ACGQ0012901		Black	
4	ACGK00	COVER ASSY,FRONT	ACGK0081801		Black	
5	MBJL00	BUTTON,SIDE	MBJL0036901	COMPLEX, (empty), , , , ,	Black	
5	MBJL01	BUTTON,SIDE	MBJL0037001	COMPLEX, (empty), , , , ,	Black	
5	MBJL02	BUTTON,SIDE	MBJL0037101	COMPLEX, (empty), , , , ,	Black	
5	MCJK00	COVER,FRONT	MCJK0065901	MOLD, PC LUPOY GP-2100, , , , ,	Black	
6	MICA00	INSERT,FRONT	MICA0019901	M1.4 D2.2 L1.5	Gold	
5	MDAG00	DECO,FRONT	MDAG0024201	MOLD, PC LUPOY SC-1004ML, , , , ,	ORANGE	
5	MDAG01	DECO,FRONT	MDAG0024301	MOLD, POM LUCAL N109-LD, , , , ,	Black	
5	MFBD00	FILTER,MIKE	MFBD0019201	COMPLEX, (empty), , , , ,	Without Color	
5	MPFL00	PLATE,LIGHT GUIDE	MPFL0001401	COMPLEX, (empty), , , , ,	Without Color	
5	MTAB00	TAPE,PROTECTION	MTAB0142201	COMPLEX, (empty), , , , ,	Without Color	
5	MTAB01	TAPE,PROTECTION	MTAB0159601	COMPLEX, (empty), , , , ,	Without Color	

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
5	MTAB02	TAPE,PROTECTION	MTAB0190701	COMPLEX, (empty), , , , ,	Without Color	
5	MTAZ01	TAPE	MTAZ0168201	COMPLEX, (empty), , , , ,	Without Color	
4	ACGR00	COVER ASSY,SLIDE(LOWER)	ACGR0008801		Black	
5	MCJV00	COVER,SLIDE(LOWER)	MCJV0008901	MOLD, PC LUPOY GP-2100, , , , ,	Black	
5	MDAY00	DECO	MDAY0034601	MOLD, POM LUCEL N109-LD, , , , ,	Black	
5	MMAZ00	MAGNET	MMAZ0004301	COMPLEX, (empty), , , , ,	Without Color	
5	MPBJ00	PAD,MOTOR	MPBJ0038401	COMPLEX, (empty), , , , ,	Black	
5	MPBM00	PAD,RECEIVER	MPBM0020501	COMPLEX, (empty), , , , ,	Without Color	
5	MPBZ00	PAD	MPBZ0159001	COMPLEX, (empty), , , , ,	Black	
5	MPBZ01	PAD	MPBZ0189901	COMPLEX, (empty), , , , ,	Without Color	
4	ACGS00	COVER ASSY,SLIDE(UPPER)	ACGS0010001		Black	
5	AWAB00	WINDOW ASSY,LCD	AWAB0025001		Black	
6	BFAA00	FILM,INMOLD	BFAA0047601	0.038mm	Without Color	
6	MWAC00	WINDOW,LCD	MWAC0074001	CUTTING, STS, , , , ,	Without Color	
5	MBFF00	BRACKET,LCD	MBFF0011601	PRESS, STS, 0.3, , , ,	Black	
5	MCJW00	COVER,SLIDE(UPPER)	MCJW0010501	MOLD, PC LUPOY SC-1004A, , , , ,	Black	
6	MICA00	INSERT,FRONT	MICA0019901	M1.4 D2.2 L1.5	Gold	
5	MFBB00	FILTER,RECEIVER	MFBB0019301	COMPLEX, (empty), , , , ,	Without Color	
5	MPBG00	PAD,LCD	MPBG0053501	COMPLEX, (empty), , , , ,	Black	
5	MTAB00	TAPE,PROTECTION	MTAB0191301	COMPLEX, (empty), , , , ,	Without Color	
5	MTAB01	TAPE,PROTECTION	MTAB0142401	COMPLEX, (empty), , , , ,	Without Color	
5	MTAB02	TAPE,PROTECTION	MTAB0142301	COMPLEX, (empty), , , , ,	Without Color	
5	MTAB03	TAPE,PROTECTION	MTAB0168001	COMPLEX, (empty), , , , ,	Without Color	
5	MTAD00	TAPE,WINDOW	MTAD0060701	COMPLEX, (empty), , , , ,	Without Color	
5	MTAF00	TAPE,MOTOR	MTAF0010101	COMPLEX, (empty), , , , ,	Without Color	
5	MWAG00	WINDOW,IRDA	MWAG0014201	MOLD, PC LEXAN 121R, , , , ,	Black	
4	AHFB00	HINGE ASSY,SLIDE	AHFB0002101		Black	
4	AKAZ00	KEYPAD ASSY	AKAZ0018701	DIAL	ORANGE	
4	GMZZ00	SCREW MACHINE	GMZZ0020501	3.5 mm,1.5 mm,SWCH18A ,A ,+ , - ,	Black	
4	GMZZ001	SCREW MACHINE	GMZZ0022402	1.4 mm,2.5 mm,MSWR3 ,N ,STR , - , , ; ,HEX ,NONE ,2.7 ,1 ,SWCH ,WHITE ,[empty] ,[empty]	White	
4	MCCH00	CAP,SCREW	MCCH0096901	COMPLEX, (empty), , , , ,	Without Color	
4	MGAD00	GASKET,SHIELD FORM	MGAD0141201	COMPLEX, (empty), , , , ,	Without Color	
4	MLAZ00	LABEL	MLAZ0038303	PRINTING, (empty), , , , ,	White	
4	MPBF00	PAD,FLEXIBLE PCB	MPBF0018401	COMPLEX, (empty), , , , ,	Black	
4	MPBT00	PAD,CAMERA	MPBT0035201	COMPLEX, (empty), , , , ,	Black	

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
4	MPBU00	PAD,CONNECTOR	MPBU0009501	COMPLEX, (empty), , , ,	Without Color	
4	MPBZ00	PAD	MPBZ0177801	COMPLEX, (empty), , , ,	Without Color	
4	MPBZ01	PAD	MPBZ0162101	COMPLEX, (empty), , , ,	Without Color	
4	MPBZ02	PAD	MPBZ0190301	COMPLEX, (empty), , , ,	Without Color	
4	MPFL00	PLATE,LIGHT GUIDE	MPFL0001201	COMPLEX, (empty), , , ,	Without Color	
4	MTAB00	TAPE,PROTECTION	MTAB0201301	COMPLEX, (empty), , , ,	Without Color	
4	MTAB01	TAPE,PROTECTION	MTAB0205101	COMPLEX, (empty), , , ,	Without Color	
4	MTAB02	TAPE,PROTECTION	MTAB0202601	COMPLEX, (empty), , , ,	Without Color	
4	MTAC00	TAPE,SHIELD	MTAC0051301	COMPLEX, (empty), , , ,	Without Color	
4	MTAC001	TAPE,SHIELD	MTAC0051401	COMPLEX, (empty), , , ,	Without Color	
4	MTAC002	TAPE,SHIELD	MTAC0048401	COMPLEX, (empty), , , ,	Without Color	
4	MTAC003	TAPE,SHIELD	MTAC0055501	COMPLEX, (empty), , , ,	Without Color	
4	MTAJ00	TAPE,FLEXIBLE PCB	MTAJ0002601	COMPLEX, (empty), , , ,	Without Color	
4	SACY00	PCB ASSY,FLEXIBLE	SACY0049901			
5	SACB00	PCB ASSY,FLEXIBLE,INSERT	SACB0041201			
6	MPBF00	PAD,FLEXIBLE PCB	MPBF0026401	COMPLEX, (empty), , , ,	Without Color	
6	MPBF01	PAD,FLEXIBLE PCB	MPBF0026501	COMPLEX, (empty), , , ,	Without Color	
6	MPBF02	PAD,FLEXIBLE PCB	MPBF0026701	COMPLEX, (empty), , , ,	Without Color	
6	MPBF03	PAD,FLEXIBLE PCB	MPBF0026801	COMPLEX, (empty), , , ,	Without Color	
6	MPBF04	PAD,FLEXIBLE PCB	MPBF0026901	COMPLEX, (empty), , , ,	Without Color	
6	MTAJ00	TAPE,FLEXIBLE PCB	MTAJ0003501	COMPLEX, (empty), , , ,	Without Color	
5	SACE00	PCB ASSY,FLEXIBLE,SMT	SACE0044401	SLIDE FPCB		
6	SACC00	PCB ASSY,FLEXIBLE,SMT BOTTOM	SACC0028101	SLIDE FPCB BOTTOM		
5	MFEA00	FRAME,SHIELD	MFEA0012901	MOLD, ABS HF-380, , , ,	Without Color	
5	MGAZ00	GASKET	MGAZ0054401	COMPLEX, (empty), , , ,	Black	
5	MGAZ01	GASKET	MGAZ0054501	COMPLEX, (empty), , , ,	Black	
5	MPBZ00	PAD	MPBZ0169001	COMPLEX, (empty), , , ,	Black	
5	MTAC00	TAPE,SHIELD	MTAC0048101	COMPLEX, (empty), , , ,	Without Color	
5	MTAZ00	TAPE	MTAZ0166501	COMPLEX, (empty), 0.15, , ,	Without Color	
5	MTAZ01	TAPE	MTAZ0166601	COMPLEX, (empty), 0.15, , ,	Without Color	
6	MTAZ00	TAPE	MTAZ0199501	COMPLEX, (empty), , , ,	Without Color	
6	MTAZ01	TAPE	MTAZ0199601	COMPLEX, (empty), , , ,	Without Color	
6	MTAZ02	TAPE	MTAZ0199701	COMPLEX, (empty), , , ,	Without Color	
3	MCCH00	CAP,SCREW	MCCH0096401	COMPLEX, (empty), , , ,	Black	
3	MCCH01	CAP,SCREW	MCCH0096501	COMPLEX, (empty), , , ,	Black	
3	MLAA00	LABEL,APPROVAL	MLAA0042202	COMPLEX, (empty), , , ,	Without Color	

11. EXPLODED VIEW & REPLACEMENT PART LIST

10.2 Replacement Parts <Main component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
7	C10	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C11	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C12	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
7	C13	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C14	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
7	C15	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C2	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
7	C3	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
7	C4	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C5	CAP,CHIP,MAKER	ECZH0001213	0.47 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
7	C6	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C7	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C9	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	CN3	CONNECTOR,BOARD TO BOARD	ENBY0019501	20 PIN, 4 mm,ETC , ,H=1.5, Socket		
7	D1	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
7	D2	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
7	D3	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
7	D4	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
7	D5	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
7	D6	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
7	D7	DIODE,SWITCHING	EDSY0011901	EMD2 ,30 V,1 A,R/TP ,VF=1.5V(IF=200mA) , IR=30uA(VR=10V)		
7	FB1	FILTER,BEAD,CHIP	SFBH0000909	60 ohm,1005 ,		
7	R10	RES,CHIP	ERHY0000179	39 ohm,1/16W ,F ,1005 ,R/TP		
7	R11	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R12	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R13	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
7	R2	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R5	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R6	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
7	R7	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	R8	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
7	R9	RES,CHIP	ERHY0000179	39 ohm,1/16W ,F ,1005 ,R/TP		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
7	U2	IC	EUSY0290701	HVSOF5 ,5 PIN,R/TP ,150mA, 2.8V, Auto Power Save LDO		
7	U3	IC	EUSY0240401	IrDA ,7 PIN,R/TP ,IrIC		
7	U4	IC	EUSY0290701	HVSOF5 ,5 PIN,R/TP ,150mA, 2.8V, Auto Power Save LDO		
7	U5	IC	EUSY0290701	HVSOF5 ,5 PIN,R/TP ,150mA, 2.8V, Auto Power Save LDO		
7	VA1	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
7	VA3	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
7	VA4	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
7	VA5	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
6	SACD00	PCB ASSY,FLEXIBLE,SMT TOP	SACD0036801	SLIDE FPCB TOP		
5	SACE00	PCB ASSY,FLEXIBLE,SMT	SACE0046701	TOUCH FPCB		
6	SACC00	PCB ASSY,FLEXIBLE,SMT BOTTOM	SACC0027901	TOUCH FPCB BOTTOM		
7	C1	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C2	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	CN900	CONNECTOR,BOARD TO BOARD	ENBY0018501	10 PIN,.4 mm,STRAIGHT , ,H=0.9,HEADER		
7	LD900	DIODE,LED,CHIP	EDLH0014201	ORANGE ,ETC ,R/TP ,1.8x1.1x0.35 ,; ,[empty] , , , ,78mW ,[empty] ,[empty] ,[empty]		
7	LD901	DIODE,LED,CHIP	EDLH0014201	ORANGE ,ETC ,R/TP ,1.8x1.1x0.35 ,; ,[empty] , , , ,78mW ,[empty] ,[empty] ,[empty]		
7	LD902	DIODE,LED,CHIP	EDLH0014201	ORANGE ,ETC ,R/TP ,1.8x1.1x0.35 ,; ,[empty] , , , ,78mW ,[empty] ,[empty] ,[empty]		
7	LD903	DIODE,LED,CHIP	EDLH0014201	ORANGE ,ETC ,R/TP ,1.8x1.1x0.35 ,; ,[empty] , , , ,78mW ,[empty] ,[empty] ,[empty]		
7	LD904	DIODE,LED,CHIP	EDLH0014201	ORANGE ,ETC ,R/TP ,1.8x1.1x0.35 ,; ,[empty] , , , ,78mW ,[empty] ,[empty] ,[empty]		
7	LD905	DIODE,LED,CHIP	EDLH0014201	ORANGE ,ETC ,R/TP ,1.8x1.1x0.35 ,; ,[empty] , , , ,78mW ,[empty] ,[empty] ,[empty]		
7	R1	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
7	R2	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
7	R3	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
7	R4	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
7	R5	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
7	R6	RES,CHIP,MAKER	ERHZ0000441	22 ohm,1/16W ,J ,1005 ,R/TP		
7	U1	IC	EUSY0316201	Capacitive sensing IC 32QFN ,32 PIN,R/TP ,Cap touch controller IC		
6	SPCY00	PCB,FLEXIBLE	SPCY0093601	POLYI ,0.3 mm,Multi- 4 ,L704i TOUCH ,; , , , , , , , ,		
4	SAEY00	PCB ASSY,KEYPAD	SAEY0052501			
5	SAEE00	PCB ASSY,KEYPAD,SMT	SAEE0020301			

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	SAEC00	PCB ASSY,KEYPAD,SMT BOTTOM	SAEC0018301			
7	C1	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C10	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C11	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C12	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C5	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C6	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C7	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C8	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
7	C9	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	CN1	CONNECTOR,BOARD TO BOARD	ENBY0018601	10 PIN,.4 mm,STRAIGHT , ,H=0.9, SOCKET		
7	CN2	CONNECTOR,FFC/FPC	ENQY0012201	35 PIN,0.3 mm,ETC , ,H=1.0		
7	CN3	CONNECTOR,BOARD TO BOARD	ENBY0020301	40 PIN,0.4 mm,ETC , ,H=0.9, Socket		
7	D1	DIODE,TVS	EDTY0009401	VMN2 ,5 V,10 W,R/TP ,1.0*0.6*0.4 ,; , ,7.82V , , ,100mW [empty] ,[empty] ,2P ,1		
7	D2	DIODE,TVS	EDTY0009401	VMN2 ,5 V,10 W,R/TP ,1.0*0.6*0.4 ,; , ,7.82V , , ,100mW [empty] ,[empty] ,2P ,1		
7	D3	DIODE,TVS	EDTY0009401	VMN2 ,5 V,10 W,R/TP ,1.0*0.6*0.4 ,; , ,7.82V , , ,100mW [empty] ,[empty] ,2P ,1		
7	FB1	FILTER,BEAD,CHIP	SFBH0000909	60 ohm,1005 ,		
7	R14	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
7	R15	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
7	R16	RES,CHIP	ERHY0000254	4.7K ohm,1/16W,J,1005,R/TP		
7	R19	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
7	R2	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
7	U2	IC	EUSY0263102	TDFN(3X3) ,14 PIN,R/TP ,5LEDS Chargepump		
7	VA10	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
7	VA11	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
7	VA12	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
7	VA6	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
7	VA7	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
7	VA8	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
7	VA9	VARISTOR	SEVY0001001	14 V , ,SMD ,50pF, 1005		
6	SPEY00	PCB,KEYPAD	SPEY0045101	FR-4 ,0.5 mm,MULTI-4 ,L704i NAVIKEY PCB		
4	SAJY00	PCB ASSY,SUB	SAJY0020701			
5	SAJB00	PCB ASSY,SUB,INSERT	SAJB0013301			
6	ADCA00	DOME ASSY,METAL	ADCA0060001		Without Color	

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	MIDZ00	INSULATOR	MIDZ0150301	COMPLEX, (empty), , , , ,	Blue	
6	MTAC00	TAPE,SHIELD	MTAC0060401	COMPLEX, (empty), , , , ,	Gold	
6	MTAZ00	TAPE	MTAZ0199201	COMPLEX, (empty), , , , ,	Black	
6	MTAZ01	TAPE	MTAZ0199301	COMPLEX, (empty), , , , ,	Black	
5	SAJE00	PCB ASSY,SUB,SMT	SAJE0015001			
6	SAJC00	PCB ASSY,SUB,SMT BOTTOM	SAJC0013501			
7	C1	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C12	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP		
7	C15	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C16	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C17	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C19	CAP,TANTAL,CHIP	ECTH0005501	33 uF,10V ,M ,L ,ESR ,2012 ,R/TP , ; , , [empty] , [empty] , ,-55TO+125C , [empty] , [empty] , [empty] , [empty]		
7	C2	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
7	C24	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
7	C27	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C28	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
7	C29	CAP,TANTAL,CHIP	ECTH0001902	10 uF,10V ,M ,L ,ESR ,1608 ,R/TP		
7	C32	CAP,TANTAL,CHIP	ECTH0004101	22 uF,6.3V ,M ,STD ,1608 ,R/TP		
7	C33	CAP,TANTAL,CHIP	ECTH0004101	22 uF,6.3V ,M ,STD ,1608 ,R/TP		
7	C34	CAP,TANTAL,CHIP	ECTH0004101	22 uF,6.3V ,M ,STD ,1608 ,R/TP		
7	CN1	CONNECTOR,BOARD TO BOARD	ENBY0040601	30 PIN,0.4 mm,ETC , ,H=1.0 , ; , , 0.40MM ,STRAIGHT ,MALE ,SMD ,R/TP , ,		
7	CN2	CONNECTOR,BOARD TO BOARD	ENBY0040601	30 PIN,0.4 mm,ETC , ,H=1.0 , ; , , 0.40MM ,STRAIGHT ,MALE ,SMD ,R/TP , ,		
7	CN3	CONNECTOR,ETC	ENZY0019501	3 PIN,3 mm,ETC , ,H=2.1		
7	D1	DIODE,TVS	EDTY0008607	SC70-6L ,6 V,200 W,R/TP ,PB-FREE		
7	D2	DIODE,TVS	EDTY0008607	SC70-6L ,6 V,200 W,R/TP ,PB-FREE		
7	D4	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
7	D5	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
7	D6	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
7	D7	DIODE,TVS	EDTY0008606	DFN-2 ,7.82 V,150 mW,R/TP ,PB-FREE		
7	J1	CONN,SOCKET	ENSY0018701	6 PIN,ETC , ,2.54 mm,H=1.8		
7	L3	INDUCTOR,CHIP	ELCH0003825	56 nH,J ,1005 ,R/TP ,chip inductor,PBFREE		
7	LD1	DIODE,LED,CHIP	EDLH0014101	R/G/B ,ETC ,R/TP ,4.6*1.35*0.8t , ; , [empty] , ,20mA , , ,125mW , [empty] , [empty] ,6P		
7	LD2	DIODE,LED,CHIP	EDLH0014101	R/G/B ,ETC ,R/TP ,4.6*1.35*0.8t , ; , [empty] , ,20mA , , ,125mW , [empty] , [empty] ,6P		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
7	MIC1	MICROPHONE	SUMY0010602	UNIT , -42 dB, 6.15*3.76*1.25 , Silicon mic , , -42 , 300 , OMNI , [empty] , 6.15*3.76*1.25 , SMD		
7	Q2	TR,BJT,NPN	EQBN0014101	VSM , 100 mW, R/TP , General Purpose BRT(NPN)		
7	Q3	TR,BJT,NPN	EQBN0014101	VSM , 100 mW, R/TP , General Purpose BRT(NPN)		
7	Q4	TR,BJT,NPN	EQBN0014101	VSM , 100 mW, R/TP , General Purpose BRT(NPN)		
7	R14	RES,CHIP,MAKER	ERHZ0000318	80.6 Kohm, 1/16W , F , 1005 , R/TP		
7	R22	RES,CHIP	ERHY0003301	100 ohm, 1/16W , J , 1005 , R/TP		
7	R24	RES,CHIP,MAKER	ERHZ0000537	680000 ohm, 1/16W , F , 1005 , R/TP		
7	R27	RES,CHIP,MAKER	ERHZ0000485	4700 ohm, 1/16W , J , 1005 , R/TP		
7	R28	RES,CHIP,MAKER	ERHZ0000493	51 Kohm, 1/16W , J , 1005 , R/TP		
7	R29	RES,CHIP,MAKER	ERHZ0000493	51 Kohm, 1/16W , J , 1005 , R/TP		
7	R30	RES,CHIP,MAKER	ERHZ0000493	51 Kohm, 1/16W , J , 1005 , R/TP		
7	R31	RES,CHIP,MAKER	ERHZ0000493	51 Kohm, 1/16W , J , 1005 , R/TP		
7	R32	RES,CHIP,MAKER	ERHZ0000493	51 Kohm, 1/16W , J , 1005 , R/TP		
7	R35	RES,CHIP	ERHY0003301	100 ohm, 1/16W , J , 1005 , R/TP		
7	R40	RES,CHIP,MAKER	ERHZ0000401	0 ohm, 1/16W , J , 1005 , R/TP		
7	R41	RES,CHIP,MAKER	ERHZ0000420	150 ohm, 1/16W , J , 1005 , R/TP		
7	R42	RES,CHIP,MAKER	ERHZ0000402	10 ohm, 1/16W , J , 1005 , R/TP		
7	R43	RES,CHIP,MAKER	ERHZ0000483	47 ohm, 1/16W , J , 1005 , R/TP		
7	R44	RES,CHIP,MAKER	ERHZ0000493	51 Kohm, 1/16W , J , 1005 , R/TP		
7	R45	DIODE,TVS	EDTY0008606	DFN-2 , 7.82 V, 150 mW, R/TP , PB-FREE		
7	R46	RES,CHIP,MAKER	ERHZ0000401	0 ohm, 1/16W , J , 1005 , R/TP		
7	R49	RES,CHIP,MAKER	ERHZ0000404	1 Kohm, 1/16W , J , 1005 , R/TP		
7	R50	RES,CHIP,MAKER	ERHZ0000483	47 ohm, 1/16W , J , 1005 , R/TP		
7	R51	RES,CHIP,MAKER	ERHZ0000483	47 ohm, 1/16W , J , 1005 , R/TP		
7	R52	RES,CHIP,MAKER	ERHZ0000401	0 ohm, 1/16W , J , 1005 , R/TP		
7	R53	RES,CHIP,MAKER	ERHZ0000401	0 ohm, 1/16W , J , 1005 , R/TP		
7	R54	RES,CHIP,MAKER	ERHZ0000268	33 Kohm, 1/16W , F , 1005 , R/TP		
7	R55	RES,CHIP,MAKER	ERHZ0000268	33 Kohm, 1/16W , F , 1005 , R/TP		
7	R56	RES,CHIP,MAKER	ERHZ0000268	33 Kohm, 1/16W , F , 1005 , R/TP		
7	S1	CONN, SOCKET	ENSY0014701	8 PIN, ETC , , 1.1 mm, H=1.95, Reverse		
7	VA1	VARISTOR	SEVY0003801	18 V , SMD ,		
7	VA11	DIODE,TVS	EDTY0008601	SOD-323 , 6 V, 400 W, R/TP , PB-FREE		
7	VA12	VARISTOR	SEVY0003801	18 V , SMD ,		
7	VA14	VARISTOR	SEVY0000702	14 V, 10% , SMD ,		
7	VA15	VARISTOR	SEVY0003801	18 V , SMD ,		
7	VA2	VARISTOR	SEVY0003801	18 V , SMD ,		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
7	VA3	VARISTOR	SEVY0003801	18 V ,SMD ,		
7	VA4	VARISTOR	SEVY0003801	18 V ,SMD ,		
7	VA5	VARISTOR	SEVY0003801	18 V ,SMD ,		
7	VA7	VARISTOR	SEVY0003801	18 V ,SMD ,		
7	VA8	VARISTOR	SEVY0003801	18 V ,SMD ,		
6	SAJD00	PCB ASSY,SUB,SMT TOP	SAJD0020301			
7	LD3	DIODE,LED,CHIP	EDLH0014302	WHITE ,ETC ,R/TP ,2.8x0.85x0.4t ,; ,[empty] , , , , , ,[empty] ,[empty] ,4P		
7	LD4	DIODE,LED,CHIP	EDLH0014302	WHITE ,ETC ,R/TP ,2.8x0.85x0.4t ,; ,[empty] , , , , , ,[empty] ,[empty] ,4P		
6	SPJY00	PCB,SUB	SPJY0034301	FR-4 ,0.5 mm,BUILD-UP 6 ,R-FPCB		
4	SJMY00	VIBRATOR,MOTOR	SJMY0008404	3 V,80 mA,10*2.7 ,; ,3V ,55mA , ,12000 , , , ,		
4	SURY00	RECEIVER	SURY0012801			
4	SVCY00	CAMERA	SVCY0009101	CMOS ,VGA ,		
4	SVLM00	LCD MODULE	SVLM0021501	MAIN ,240*320 ,40.5*57*1.7 ,262k ,TFT ,TM ,BD663474 ,		
3	AFBA00	FRAME ASSY,SHIELD	AFBA0005301		Black	
4	AFBD00	FRAME ASSY,SHIELD(SUB)	AFBD0000201		Without Color	
4	SACY00	PCB ASSY,FLEXIBLE	SACY0052301			
5	SACB00	PCB ASSY,FLEXIBLE,INSERT	SACB0041301			
5	SACE00	PCB ASSY,FLEXIBLE,SMT	SACE0046901	CAM FPCB		
6	SACD00	PCB ASSY,FLEXIBLE,SMT TOP	SACD0038601	CAM FPCB TOP		
7	CN1	CONNECTOR,BOARD TO BOARD	ENBY0028401	40 PIN,0.4 mm,ETC , ,H=1.5, P4S Header		
7	CN2	CONNECTOR,BOARD TO BOARD	ENBY0015601	34 PIN,0.4 mm,STRAIGHT ,AU ,0.9MM HEIGHT		
7	LD1	DIODE,LED,CHIP	EDLH0014102	ORANGE ,1608 ,R/TP ,0.4T ,; ,[empty] ,2.1~2.6V ,20mA , , ,78mW ,[empty] ,[empty] ,2P		
7	VA2	VARISTOR	SEVY0001001	14 V ,SMD ,50pF, 1005		
6	SPCY00	PCB,FLEXIBLE	SPCY0093701	POLYI ,0.4 mm,MULTI-4 ,L704i CAMERA ,; , , , , , , , ,		
4	SUSY00	SPEAKER	SUSY0025601	ASSY ,8 ohm,90 dB,16 mm,3.4T, Wire15mm ,; , , , , , , , ,WIRE		
4	SVCY00	CAMERA	SVCY0012401	CMOS ,MEGA ,2M AF FPCB, Micron 1/4		
3	GMZZ00	SCREW MACHINE	GMZZ0022402	1.4 mm,2.5 mm,MSWR3 ,N ,STR , - ,; ,HEX ,NONE ,2.7 ,1 ,SWCH ,WHITE ,[empty] ,[empty]	White	
3	SAFY	PCB ASSY,MAIN	SAFY0217701			
4	SAFF00	PCB ASSY,MAIN,SMT	SAFF0138801			
5	MLAZ00	LABEL	MLAZ0038301	PID Label 4 Array	Without Color	
5	SAFC	PCB ASSY,MAIN,SMT BOTTOM	SAFC0080201			

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	BAT1	BATTERY,CELL,LITHIUM	SBCL0001305	3 V,1 mAh,COIN ,SMT Temp.260 degree. PB-Free B/B		
6	C1376	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1387	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C1388	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C1393	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C1396	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1398	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1399	CAP,CERAMIC,CHIP	ECCH0009508	47 pF,25V ,J ,NP0 ,TC ,0603 ,R/TP		
6	C1400	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1415	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C1423	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1437	CAP,CERAMIC,CHIP	ECCH0009206	68 pF,25V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1458	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C1461	CAP,CERAMIC,CHIP	ECCH0009514	10 pF,25V ,D ,X7R ,HD ,0603 ,R/TP		
6	C1462	CAP,CERAMIC,CHIP	ECCH0009514	10 pF,25V ,D ,X7R ,HD ,0603 ,R/TP		
6	C1532	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C1533	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C1563	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1564	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1565	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1566	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1589	CAP,TANTAL,CHIP	ECTH0004807	10 uF,10V ,M ,STD ,1608 ,R/TP ,; , [empty] , [empty] , -55TO+125C , [empty] , [empty] , [empty] , [empty]		
6	C1590	CAP,TANTAL,CHIP	ECTH0004807	10 uF,10V ,M ,STD ,1608 ,R/TP ,; , [empty] , [empty] , -55TO+125C , [empty] , [empty] , [empty] , [empty]		
6	C1595	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C1596	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C1597	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C1609	CAP,CHIP,MAKER	ECZH0025920	1000 pF,16V ,K ,X7R ,HD ,0603 ,R/TP		
6	C1625	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C1630	CAP,CERAMIC,CHIP	ECCH0001001	6.8 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C1631	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1642	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1660	CAP,TANTAL,CHIP	ECTH0005501	33 uF,10V ,M ,L_ESR ,2012 ,R/TP ,; , [empty] , [empty] , -55TO+125C , [empty] , [empty] , [empty] , [empty]		
6	C1661	CAP,TANTAL,CHIP	ECTH0005501	33 uF,10V ,M ,L_ESR ,2012 ,R/TP ,; , [empty] , [empty] , -55TO+125C , [empty] , [empty] , [empty] , [empty]		
6	C1666	CAP,TANTAL,CHIP	ECTH0005501	33 uF,10V ,M ,L_ESR ,2012 ,R/TP ,; , [empty] , [empty] , -55TO+125C , [empty] , [empty] , [empty] , [empty]		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C1705	CAP,CERAMIC,CHIP	ECCH0000393	22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP		
6	C1709	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C1710	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C1712	CAP,CERAMIC,CHIP	ECCH0009514	10 pF,25V ,D ,X7R ,HD ,0603 ,R/TP		
6	C1713	CAP,CERAMIC,CHIP	ECCH0009514	10 pF,25V ,D ,X7R ,HD ,0603 ,R/TP		
6	C1714	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1715	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C2000	CAP,CHIP,MAKER	ECZH0000846	8.2 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C2007	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C2008	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C2010	CAP,CERAMIC,CHIP	ECCH0009514	10 pF,25V ,D ,X7R ,HD ,0603 ,R/TP		
6	C2011	CAP,CERAMIC,CHIP	ECCH0009514	10 pF,25V ,D ,X7R ,HD ,0603 ,R/TP		
6	C2013	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C545	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C562	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C563	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C566	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C569	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C610	CAP,CHIP,MAKER	ECZH0025920	1000 pF,16V ,K ,X7R ,HD ,0603 ,R/TP		
6	C611	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C656	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C657	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C663	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C664	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C665	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C695	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C696	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C697	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C698	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C699	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C700	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C701	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C702	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C703	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C704	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C708	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C709	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C712	CAP,TANTAL,CHIP	ECTH0005501	33 uF,10V ,M ,L_ESR ,2012 ,R/TP ,; , ,[empty] ,[empty] , , -55TO+125C , ,[empty] ,[empty] ,[empty] ,[empty]		
6	C713	CAP,CHIP,MAKER	ECZH0000816	12 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C714	CAP,CHIP,MAKER	ECZH0000816	12 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C715	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	CN804	CONNECTOR,I/O	ENRY0005101	10 PIN,0.5 mm,ANGLE , ,Japan W-CDMA, 1 Coaxial		
6	CN832	CONNECTOR,BOARD TO BOARD	ENBY0016701	20 PIN,0.4 mm,STRAIGHT ,AU ,0.9 STACKING,MALE		
6	CN837	CONNECTOR,BOARD TO BOARD	ENBY0028501	40 PIN,0.4 mm,ETC , ,H=1.5, P4S Socket		
6	CN838	CONN,JACK/PLUG,EARPH ONE	ENJE0004401	,10 PIN,		
6	D13	DIODE,TVS	EDTY0008607	SC70-6L ,6 V,200 W,R/TP ,PB-FREE		
6	D14	DIODE,SWITCHING	EDSY0011901	EMD2 ,30 V,1 A,R/TP ,VF=1.5V(IF=200mA) , IR=30uA(VR=10V)		
6	D18	DIODE,TVS	EDTY0009401	VMN2 ,5 V,10 W,R/TP ,1.0*0.6*0.4 ,; , ,7.82V , , ,100mW ,[empty] ,[empty] ,2P ,1		
6	D19	DIODE,TVS	EDTY0009401	VMN2 ,5 V,10 W,R/TP ,1.0*0.6*0.4 ,; , ,7.82V , , ,100mW ,[empty] ,[empty] ,2P ,1		
6	D24	DIODE,TVS	EDTY0009401	VMN2 ,5 V,10 W,R/TP ,1.0*0.6*0.4 ,; , ,7.82V , , ,100mW ,[empty] ,[empty] ,2P ,1		
6	D25	DIODE,TVS	EDTY0009401	VMN2 ,5 V,10 W,R/TP ,1.0*0.6*0.4 ,; , ,7.82V , , ,100mW ,[empty] ,[empty] ,2P ,1		
6	FB1	FILTER,BEAD,CHIP	SFBH0002302	120 ohm,1608 ,CHIP BEAD, 2000mA		
6	FB9	FILTER,BEAD,CHIP	SFBH0000909	60 ohm,1005 ,		
6	FL1	FILTER,EMI/POWER	SFEY0006501	SMD ,3 TERMINAL EMI FILTER		
6	FL32	FILTER,SAW	SFSY0030201	897.5 MHz,1.4*1.1*0.6 ,SMD ,Pb-free ,SAW ,GSM900 ,Tx		
6	FL34	FILTER,SEPERATOR	SFAY0008901	800.900,1800 ,1900.2100 , dB, dB, dB, dB,ETC ,Triple GSM, Dual WCDMA with 3 Rx SAW Filter, 5.0x4.0x1.5		
6	L1	INDUCTOR,SMD,POWER	ELCP0008001	4.7 uH,M ,2.5*2.0*1.0 ,R/TP ,		
6	L14	INDUCTOR,CHIP	ELCH0003825	56 nH,J ,1005 ,R/TP ,chip inductor,PBFREE		
6	L2	INDUCTOR,SMD,POWER	ELCP0008004	4.7 uH,M ,1 ,R/TP ,; , ,0.3NH , , , ,NON SHIELD ,2.5X2X1MM ,11MM ,R/TP		
6	L41	INDUCTOR,CHIP	ELCH0001401	15 nH,J ,1005 ,R/TP ,Pb Free		
6	L57	INDUCTOR,CHIP	ELCH0001408	6.8 nH,J ,1005 ,R/TP ,Pb Free		
6	L6	INDUCTOR,CHIP	ELCH0001408	6.8 nH,J ,1005 ,R/TP ,Pb Free		
6	L60	INDUCTOR,SMD,POWER	ELCP0008001	4.7 uH,M ,2.5*2.0*1.0 ,R/TP ,		
6	L7	INDUCTOR,CHIP	ELCH0001009	1.2 nH,S ,1005 ,R/TP ,		
6	L8	INDUCTOR,CHIP	ELCH0001401	15 nH,J ,1005 ,R/TP ,Pb Free		
6	Q1	TR,BJT,PNP	EQBP0009901	TSMT6 ,0.5 W,R/TP ,Vce0=-12V, Ic=-3A, hFE=270~680		
6	Q7	TR,BJT,ARRAY	EQBA0000602	TESV ,200 mW,R/TP ,EPITAXIAL PLANAR NPN/PNP TRANSISTOR		
6	Q8	TR,FET,P-CHANNEL	EQFP0005101	SC75-6 ,1.6 W,-20 V,-4.2 A,R/TP ,P- CHANNEL FET		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R1046	RES,CHIP,MAKER	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP		
6	R1090	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R1108	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1109	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1110	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1120	RES,CHIP	ERHY0009535	24 ohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1125	RES,CHIP	ERHY0009524	47 ohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1126	RES,CHIP,MAKER	ERHZ0000473	39 ohm,1/16W ,J ,1005 ,R/TP		
6	R1127	RES,CHIP,MAKER	ERHZ0000473	39 ohm,1/16W ,J ,1005 ,R/TP		
6	R1137	RES,CHIP,MAKER	ERHZ0003901	.1 ohm,1/4W ,F ,2012 ,R/TP		
6	R1138	RES,CHIP,MAKER	ERHZ0004201	121000 ohm,1/16W ,F ,1005 ,R/TP		
6	R1280	RES,CHIP	ERHY0009503	100 ohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1281	RES,CHIP	ERHY0009503	100 ohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1282	RES,CHIP,MAKER	ERHZ0000201	100 ohm,1/16W ,F ,1005 ,R/TP		
6	R1283	RES,CHIP	ERHY0009505	10 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1340	RES,CHIP	ERHY0009527	47 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1341	RES,CHIP	ERHY0009527	47 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1350	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1356	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1357	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1358	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1360	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1361	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1419	RES,CHIP,MAKER	ERHZ0000429	180 ohm,1/16W ,J ,1005 ,R/TP		
6	R1420	RES,CHIP,MAKER	ERHZ0000429	180 ohm,1/16W ,J ,1005 ,R/TP		
6	R1421	RES,CHIP,MAKER	ERHZ0000415	130 ohm,1/16W ,J ,1005 ,R/TP		
6	R1422	RES,CHIP,MAKER	ERHZ0000415	130 ohm,1/16W ,J ,1005 ,R/TP		
6	R1423	RES,CHIP,MAKER	ERHZ0000504	68 ohm,1/16W ,J ,1005 ,R/TP		
6	R1424	RES,CHIP,MAKER	ERHZ0000512	82 ohm,1/16W ,J ,1005 ,R/TP		
6	R1434	RES,CHIP	ERHY0009504	1 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1444	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1447	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R2001	RES,CHIP,MAKER	ERHZ0000206	10 ohm,1/16W ,F ,1005 ,R/TP		
6	SW1	CONN,RF SWITCH	ENWY0003301	,SMD ,0.4 dB,		
6	U513	IC	EUSY0306302	BCCS ,84 PIN,R/TP ,7x7, MSMC(1.2V), pbfree		
6	U552	IC	EUSY0207001	MINI MOLD ,6 PIN,R/TP ,SPDT SWITCH		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	U568	IC	EUSY0290701	HVSOF5 ,5 PIN,R/TP ,150mA, 2.8V, Auto Power Save LDO		
6	U569	PAM	SMPY0014001	35.5 dBm,56 %, A, dBc, dB,6x6x1.15 ,SMD ,Tri Band		
6	U573	IC	EUSY0160401	SOT-23 ,3 PIN,R/TP ,DC MOTOR DRIVER / INTEGRATED RELAY		
6	U580	IC	EUSY0297101	HVSOF5 ,5 PIN,R/TP ,1.8V 150mA Auto power detect LDO		
6	VA541	VARISTOR	SEVY0008102	5.5 V , ,SMD ,0603		
6	VA544	VARISTOR	SEVY0008102	5.5 V , ,SMD ,0603		
6	VA546	VARISTOR	SEVY0008102	5.5 V , ,SMD ,0603		
6	X2	X-TAL	EXXY0016601	32.768 KHz,20 PPM,9 pF,65 Kohm,SMD ,4.9*1.8*0.9 ,		
6	X4	VCTCXO	EXSK0007801	19.2 MHz,2 PPM,10 pF,SMD ,3.3*2.5*1.0 ,2ppm at -30~+85, AFC 0.4V~2.4V, 2.8V ; ,19.2MHz ,2PPM ,2.8V ,3.3mm ,2.5mm ,1.0mm , ,SMD ,R/TP		
6	ZD3	DIODE,TVS	EDTY0007401	SMD ,12 V,350 W,R/TP ,		
5	SAFD	PCB ASSY,MAIN,SMT TOP	SAFD0079001			
6	C1194	CAP,CERAMIC,CHIP	ECCH0009103	100 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1195	CAP,CERAMIC,CHIP	ECCH0009106	10 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
6	C1207	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1208	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1209	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1210	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1211	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1212	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1213	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1214	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C1215	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1216	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1245	CAP,CERAMIC,CHIP	ECCH0009201	47 nF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1246	CAP,CERAMIC,CHIP	ECCH0009201	47 nF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1250	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1252	CAP,TANTAL,CHIP	ECTH0004807	10 uF,10V ,M ,STD ,1608 ,R/TP , ; , ,[empty] ,[empty] , , -55TO+125C , ,[empty] ,[empty] ,[empty] ,[empty]		
6	C1348	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1368	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1373	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1374	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1375	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1377	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V ,J,NP0,TC,1005,R/TP		
6	C1380	CAP,CHIP,MAKER	ECZH0000844	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C1382	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1401	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1404	CAP,CERAMIC,CHIP	ECCH0001002	180 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1405	CAP,CERAMIC,CHIP	ECCH0001002	180 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1406	CAP,CERAMIC,CHIP	ECCH0001002	180 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1407	CAP,CERAMIC,CHIP	ECCH0001002	180 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1410	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C1412	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C1419	CAP,CHIP,MAKER	ECZH0000844	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1422	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1426	CAP,CERAMIC,CHIP	ECCH0009103	100 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1429	CAP,CERAMIC,CHIP	ECCH0000107	6 pF,50V,D,NP0,TC,1005,R/TP		
6	C1430	CAP,CERAMIC,CHIP	ECCH0000107	6 pF,50V,D,NP0,TC,1005,R/TP		
6	C1431	CAP,CERAMIC,CHIP	ECCH0000107	6 pF,50V,D,NP0,TC,1005,R/TP		
6	C1432	CAP,CERAMIC,CHIP	ECCH0000107	6 pF,50V,D,NP0,TC,1005,R/TP		
6	C1440	CAP,CERAMIC,CHIP	ECCH0000101	.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C1448	CAP,CHIP,MAKER	ECZH0000816	12 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1449	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C1450	CAP,CHIP,MAKER	ECZH0000816	12 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1456	CAP,CERAMIC,CHIP	ECCH0000127	82 pF,50V,J,NP0,TC,1005,R/TP		
6	C1465	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C1471	CAP,CERAMIC,CHIP	ECCH0000196	0.75 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C1482	CAP,TANTAL,CHIP	ECTH0004807	10 uF,10V ,M ,STD ,1608 ,R/TP ,; , , [empty] , [empty] , , -55TO+125C , , [empty] , [empty] , [empty] , [empty]		
6	C1508	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C1509	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1514	CAP,CHIP,MAKER	ECZH0025920	1000 pF,16V ,K ,X7R ,HD ,0603 ,R/TP		
6	C1516	CAP,CERAMIC,CHIP	ECCH0009508	47 pF,25V ,J ,NP0 ,TC ,0603 ,R/TP		
6	C1517	CAP,CHIP,MAKER	ECZH0000816	12 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1519	CAP,FILM,MPP	ECFD0000105	2.2 nF,16V ,J ,STD ,SMD ,1608 mm,R/TP ,; , , 5% , [empty] , [empty] , -55TO+125C , [empty] , 1.6X0.8X0.7MM ,R/TP		
6	C1550	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C1559	CAP,CERAMIC,CHIP	ECCH0009106	10 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
6	C1562	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1567	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C1569	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1573	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1574	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C1575	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1578	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1588	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1591	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1592	CAP,CERAMIC,CHIP	ECCH0009103	100 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1593	CAP,CERAMIC,CHIP	ECCH0000105	4 pF,50V,C,NP0,TC,1005,R/TP		
6	C1594	CAP,CERAMIC,CHIP	ECCH0000105	4 pF,50V,C,NP0,TC,1005,R/TP		
6	C1601	CAP,CERAMIC,CHIP	ECCH0009506	27 pF,25V ,J ,NP0 ,TC ,0603 ,R/TP		
6	C1602	CAP,CERAMIC,CHIP	ECCH0009506	27 pF,25V ,J ,NP0 ,TC ,0603 ,R/TP		
6	C1603	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1604	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1605	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1606	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C1608	CAP,CHIP,MAKER	ECZH0025920	1000 pF,16V ,K ,X7R ,HD ,0603 ,R/TP		
6	C1610	CAP,CERAMIC,CHIP	ECCH0009103	100 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1611	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1612	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1613	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C1615	CAP,CERAMIC,CHIP	ECCH0009103	100 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1616	CAP,CERAMIC,CHIP	ECCH0009505	22 pF,25V ,J ,NP0 ,TC ,0603 ,R/TP		
6	C1618	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1619	CAP,CERAMIC,CHIP	ECCH0009103	100 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C1622	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1623	CAP,CERAMIC,CHIP	ECCH0009106	10 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
6	C1628	CAP,TANTAL,CHIP	ECTH0004807	10 uF,10V ,M ,STD ,1608 ,R/TP , , , [empty] , [empty] , -55TO+125C , [empty] , [empty] , [empty] , [empty]		
6	C1640	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1643	CAP,CERAMIC,CHIP	ECCH0009505	22 pF,25V ,J ,NP0 ,TC ,0603 ,R/TP		
6	C1645	CAP,CHIP,MAKER	ECZH0000844	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1646	CAP,CHIP,MAKER	ECZH0000844	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1647	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1648	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1649	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1651	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1652	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1653	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1654	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C1655	CAP,CERAMIC,CHIP	ECCH0009107	2.2 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
6	C1662	CAP,CHIP,MAKER	ECZH0025920	1000 pF,16V ,K ,X7R ,HD ,0603 ,R/TP		
6	C1663	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C1664	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C1665	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C1667	CAP,CHIP,MAKER	ECZH0000844	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1669	CAP,CERAMIC,CHIP	ECCH0002002	47000 pF,10V ,K ,B ,HD ,1005 ,R/TP		
6	C1675	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C1679	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C1683	CAP,CERAMIC,CHIP	ECCH0000149	3.3 nF,50V,K,X7R,HD,1005,R/TP		
6	C1684	CAP,CHIP,MAKER	ECZH0000806	5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C1685	CAP,CERAMIC,CHIP	ECCH0000187	150 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C1686	CAP,CERAMIC,CHIP	ECCH0000393	22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP		
6	C1687	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
6	C1691	CAP,CERAMIC,CHIP	ECCH0009505	22 pF,25V ,J ,NP0 ,TC ,0603 ,R/TP		
6	C1692	CAP,CERAMIC,CHIP	ECCH0009505	22 pF,25V ,J ,NP0 ,TC ,0603 ,R/TP		
6	C1693	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C1694	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C1695	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C1696	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C1698	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C1699	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C1700	CAP,CERAMIC,CHIP	ECCH0000138	390 pF,50V,K,X7R,HD,1005,R/TP		
6	C1701	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C1702	CAP,TANTAL,CHIP	ECTH0003704	4.7 uF,10V ,M ,STD ,1608 ,R/TP		
6	C1703	CAP,CERAMIC,CHIP	ECCH0000129	120 pF,50V,J,NP0,TC,1005,R/TP		
6	C1704	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
6	C1706	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C1707	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C1708	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C1711	CAP,CERAMIC,CHIP	ECCH0000393	22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP		
6	C2001	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C2002	CAP,CERAMIC,CHIP	ECCH0000101	.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C2003	CAP,CERAMIC,CHIP	ECCH0000101	.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C2004	CAP,CERAMIC,CHIP	ECCH0000185	5.6 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	C2005	CAP,CERAMIC,CHIP	ECCH0000108	7 pF,50V,D,NP0,TC,1005,R/TP		
6	C2006	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C2009	CAP,CERAMIC,CHIP	ECCH0009514	10 pF,25V ,D ,X7R ,HD ,0603 ,R/TP		
6	C2012	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C410	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C489	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C514	CAP,CERAMIC,CHIP	ECCH0009110	22 nF,6.3V ,K ,X7R ,TC ,0603 ,R/TP		
6	C516	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C517	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C518	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C519	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C520	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C521	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C523	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C524	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C525	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C526	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C532	CAP,CERAMIC,CHIP	ECCH0009106	10 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
6	C533	CAP,CERAMIC,CHIP	ECCH0009106	10 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
6	C534	CAP,CERAMIC,CHIP	ECCH0009106	10 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
6	C535	CAP,CERAMIC,CHIP	ECCH0009106	10 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
6	C536	CAP,CERAMIC,CHIP	ECCH0009106	10 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
6	C537	CAP,CERAMIC,CHIP	ECCH0009106	10 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
6	C538	CAP,CERAMIC,CHIP	ECCH0009106	10 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
6	C539	CAP,CERAMIC,CHIP	ECCH0009106	10 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
6	C540	CAP,CERAMIC,CHIP	ECCH0009106	10 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
6	C541	CAP,CERAMIC,CHIP	ECCH0009106	10 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
6	C542	CAP,CERAMIC,CHIP	ECCH0009106	10 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
6	C543	CAP,CERAMIC,CHIP	ECCH0009106	10 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
6	C546	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C547	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C548	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C588	CAP,CERAMIC,CHIP	ECCH0009107	2.2 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
6	C599	CAP,CHIP,MAKER	ECZH0025920	1000 pF,16V ,K ,X7R ,HD ,0603 ,R/TP		
6	C601	CAP,CHIP,MAKER	ECZH0025920	1000 pF,16V ,K ,X7R ,HD ,0603 ,R/TP		
6	C602	CAP,CHIP,MAKER	ECZH0025920	1000 pF,16V ,K ,X7R ,HD ,0603 ,R/TP		
6	C603	CAP,CHIP,MAKER	ECZH0025920	1000 pF,16V ,K ,X7R ,HD ,0603 ,R/TP		
6	C604	CAP,CHIP,MAKER	ECZH0025920	1000 pF,16V ,K ,X7R ,HD ,0603 ,R/TP		
6	C605	CAP,CHIP,MAKER	ECZH0025920	1000 pF,16V ,K ,X7R ,HD ,0603 ,R/TP		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C608	CAP,CHIP,MAKER	ECZH0025920	1000 pF,16V ,K ,X7R ,HD ,0603 ,R/TP		
6	C617	CAP,CERAMIC,CHIP	ECCH0000161	33 nF,16V,K,X7R,HD,1005,R/TP		
6	C618	CAP,TANTAL,CHIP	ECTH0004807	10 uF,10V ,M ,STD ,1608 ,R/TP , , , [empty] , [empty] , , -55TO+125C , , [empty] , [empty] , [empty] , [empty]		
6	C619	CAP,TANTAL,CHIP	ECTH0003704	4.7 uF,10V ,M ,STD ,1608 ,R/TP		
6	C622	CAP,CERAMIC,CHIP	ECCH0009104	33 pF,50V ,J ,X7R ,TC ,0603 ,R/TP		
6	C651	CAP,CERAMIC,CHIP	ECCH0009514	10 pF,25V ,D ,X7R ,HD ,0603 ,R/TP		
6	C760	CAP,CERAMIC,CHIP	ECCH0009110	22 nF,6.3V ,K ,X7R ,TC ,0603 ,R/TP		
6	C777	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C778	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C779	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C780	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C781	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C782	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C783	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C784	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C785	CAP,CERAMIC,CHIP	ECCH0009101	0.1 uF,6.3V ,K ,X5R ,TC ,0603 ,R/TP		
6	C786	CAP,CERAMIC,CHIP	ECCH0009106	10 nF,16V ,K ,X7R ,TC ,0603 ,R/TP		
6	CN833	CONNECTOR,BOARD TO BOARD	ENBY0019801	80 PIN,0.4 mm,ETC , , H=1.5, Header		
6	CN834	CONNECTOR,BOARD TO BOARD	ENBY0040701	30 PIN, mm,ETC , , , , , 0.40MM ,STRAIGHT ,FEMALE ,SMD ,R/TP ,1.0 ,		
6	CN835	CONNECTOR,BOARD TO BOARD	ENBY0040701	30 PIN, mm,ETC , , , , , 0.40MM ,STRAIGHT ,FEMALE ,SMD ,R/TP ,1.0 ,		
6	D23	DIODE,TVS	EDTY0009401	VMN2 ,5 V,10 W,R/TP ,1.0*0.6*0.4 , , , 7.82V , , 100mW , [empty] , [empty] ,2P ,1		
6	D26	DIODE,TVS	EDTY0009401	VMN2 ,5 V,10 W,R/TP ,1.0*0.6*0.4 , , , 7.82V , , 100mW , [empty] , [empty] ,2P ,1		
6	FL18	DUPLEXER,DCN	SDDY0004502	835 MHz,880 MHz,1.35 dB,1.75 dB,53 dB,42 dB,3.0*2.5*0.8 ,SMD ,HTCC		
6	FL24	FILTER,SAW	SFSY0028101	1950 MHz,1.4*1.4 ,SMD ,Pb-free_DCS1900_Rx		
6	FL25	FILTER,SAW	SFSY0029201	2140 MHz,1.35*1.05*0.6 ,SMD ,Pb-free_WCDMA_Rx_200ohm		
6	FL26	FILTER,EMI/POWER	SFEY0011701	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (10 Ohm,7.5pF)		
6	FL27	FILTER,EMI/POWER	SFEY0011701	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (10 Ohm,7.5pF)		
6	FL28	FILTER,EMI/POWER	SFEY0011701	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (10 Ohm,7.5pF)		
6	FL29	FILTER,EMI/POWER	SFEY0011701	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (10 Ohm,7.5pF)		
6	FL30	FILTER,EMI/POWER	SFEY0011701	SMD ,SMD ,18 V,4ch. EMI_ESD Filter (10 Ohm,7.5pF)		
6	FL31	FILTER,SAW	SFSY0030301	836.5 MHz,1.4*1.1*0.6 ,SMD ,Pb-free_DCN_Tx_SAW		
6	FL33	FILTER,SAW	SFSY0030101	881.5 MHz,1.4*1.1*0.6 ,SMD ,Pb-free_WCDMA850_Rx_SAW		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	FL35	DUPLEXER,IMT	SDMY0001201	1950 MHz,2140 MHz,1.8 dB,2.4 dB,43 dB,45 dB,3.0*2.5*1.1 ,SMD ,SAW ,; ,2140 ,45 ,1950 ,43 ,2.4 ,1.8 ,3.0x2.5x1.1 ,DUAL ,SMD ,P/TP		
6	L10	INDUCTOR,CHIP	ELCH0001401	15 nH,J ,1005 ,R/TP ,Pb Free		
6	L11	INDUCTOR,CHIP	ELCH0001408	6.8 nH,J ,1005 ,R/TP ,Pb Free		
6	L12	INDUCTOR,CHIP	ELCH0001420	3.9 nH,S ,1005 ,R/TP ,PBFREE		
6	L13	INDUCTOR,CHIP	ELCH0001420	3.9 nH,S ,1005 ,R/TP ,PBFREE		
6	L15	INDUCTOR,CHIP	ELCH0001407	5.6 nH,S ,1005 ,R/TP ,PBFREE		
6	L16	INDUCTOR,CHIP	ELCH0001402	18 nH,J ,1005 ,R/TP ,Pb Free		
6	L17	INDUCTOR,CHIP	ELCH0001402	18 nH,J ,1005 ,R/TP ,Pb Free		
6	L2000	INDUCTOR,CHIP	ELCH0001408	6.8 nH,J ,1005 ,R/TP ,Pb Free		
6	L2001	INDUCTOR,CHIP	ELCH0001403	1 nH,S ,1005 ,R/TP ,PBFREE		
6	L2002	INDUCTOR,CHIP	ELCH0001427	2.2 nH,S ,1005 ,R/TP ,Pb Free		
6	L2003	INDUCTOR,CHIP	ELCH0001030	8.2 nH,J ,1005 ,R/TP ,PB-FREE		
6	L21	INDUCTOR,CHIP	ELCH0001407	5.6 nH,S ,1005 ,R/TP ,PBFREE		
6	L23	INDUCTOR,CHIP	ELCH0001402	18 nH,J ,1005 ,R/TP ,Pb Free		
6	L24	INDUCTOR,CHIP	ELCH0001404	1.5 nH,S,1005,R/TP		
6	L25	INDUCTOR,CHIP	ELCH0001404	1.5 nH,S,1005,R/TP		
6	L27	INDUCTOR,CHIP	ELCH0001406	4.7 nH,S ,1005 ,R/TP ,PBFREE		
6	L28	INDUCTOR,CHIP	ELCH0001406	4.7 nH,S ,1005 ,R/TP ,PBFREE		
6	L31	INDUCTOR,CHIP	ELCH0001412	1.8 nH,S ,1005 ,R/TP ,PBFREE		
6	L36	INDUCTOR,CHIP	ELCH0001401	15 nH,J ,1005 ,R/TP ,Pb Free		
6	L48	INDUCTOR,CHIP	ELCH0005006	33 nH,J ,1005 ,R/TP ,		
6	L51	INDUCTOR,CHIP	ELCH0001421	47 nH,J ,1005 ,R/TP ,PBFREE		
6	L52	INDUCTOR,CHIP	ELCH0001421	47 nH,J ,1005 ,R/TP ,PBFREE		
6	L55	INDUCTOR,CHIP	ELCH0001009	1.2 nH,S ,1005 ,R/TP ,		
6	L56	INDUCTOR,CHIP	ELCH0001009	1.2 nH,S ,1005 ,R/TP ,		
6	L58	INDUCTOR,CHIP	ELCH0001401	15 nH,J ,1005 ,R/TP ,Pb Free		
6	L59	INDUCTOR,CHIP	ELCH0001401	15 nH,J ,1005 ,R/TP ,Pb Free		
6	L61	INDUCTOR,CHIP	ELCH0001034	3.3 nH,S ,1005 ,R/TP ,PBFREE		
6	L63	INDUCTOR,SMD,POWER	ELCP0010001	2.2 uH,M ,2.5x2.0x1.0 ,R/TP ,chip MLCI ,; , ,20% , , , , ,NON SHIELD ,2.5X2X1MM ,[empty] ,R/TP		
6	L64	INDUCTOR,CHIP	ELCH0001427	2.2 nH,S ,1005 ,R/TP ,Pb Free		
6	Q12	TR,BJT,NPN	EQBN0012401	ESM ,100 mW,R/TP ,NPN TRANSISTOR		
6	Q6	TR,BJT,ARRAY	EQBA0000602	TESV ,200 mW,R/TP ,EPITAXIAL PLANAR NPN/PNP TRANSISTOR		
6	Q9	TR,BJT,ARRAY	EQBA0000602	TESV ,200 mW,R/TP ,EPITAXIAL PLANAR NPN/PNP TRANSISTOR		
6	R1047	RES,CHIP	ERHY0009547	200 Kohm,1/20W(0.05W) ,F ,0603 ,R/TP		
6	R1048	RES,CHIP	ERHY0009558	68 Kohm,1/20W(0.05W) ,F ,0603 ,R/TP		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R1091	RES,CHIP	ERHY0009516	2.2 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1092	RES,CHIP	ERHY0009516	2.2 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1095	RES,CHIP	ERHY0009516	2.2 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1098	RES,CHIP	ERHY0009527	47 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1099	RES,CHIP	ERHY0009527	47 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1100	RES,CHIP	ERHY0009527	47 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1101	RES,CHIP	ERHY0009527	47 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1119	RES,CHIP	ERHY0009535	24 ohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1121	RES,CHIP,MAKER	ERHZ0000437	2 Kohm,1/16W ,J ,1005 ,R/TP		
6	R1167	RES,CHIP	ERHY0009516	2.2 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1168	RES,CHIP	ERHY0009527	47 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1169	RES,CHIP	ERHY0009527	47 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1225	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1227	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1228	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1229	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1264	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1285	RES,CHIP	ERHY0009524	47 ohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1287	RES,CHIP	ERHY0009524	47 ohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1288	RES,CHIP,MAKER	ERHZ0000351	11800 ohm,1/16W ,F ,1005 ,R/TP		
6	R1289	RES,CHIP	ERHY0005902	5.62 Kohm,1/16W ,F ,1005 ,R/TP		
6	R1290	RES,CHIP,MAKER	ERHZ0000310	680 ohm,1/16W ,F ,1005 ,R/TP		
6	R1291	RES,CHIP,MAKER	ERHZ0000212	12 Kohm,1/16W ,F ,1005 ,R/TP		
6	R1302	RES,CHIP	ERHY0009504	1 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1303	RES,CHIP	ERHY0009504	1 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1304	RES,CHIP	ERHY0009504	1 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1307	RES,CHIP	ERHY0009516	2.2 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1308	RES,CHIP	ERHY0009516	2.2 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1326	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
6	R1352	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1353	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1354	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1355	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1359	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1376	RES,CHIP,MAKER	ERHZ0000206	10 ohm,1/16W ,F ,1005 ,R/TP		
6	R1382	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1383	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R1404	RES,CHIP	ERHY0009522	3.3 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1410	RES,CHIP	ERHY0009532	6.8 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1411	RES,CHIP,MAKER	ERHZ0000288	470 Kohm,1/16W ,F ,1005 ,R/TP		
6	R1412	RES,CHIP,MAKER	ERHZ0000537	680000 ohm,1/16W ,F ,1005 ,R/TP		
6	R1413	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1417	RES,CHIP,MAKER	ERHZ0000509	75 ohm,1/16W ,J ,1005 ,R/TP		
6	R1418	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R1425	RES,CHIP,MAKER	ERHZ0000203	10 Kohm,1/16W ,F ,1005 ,R/TP		
6	R1426	RES,CHIP	ERHY0009503	100 ohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1427	RES,CHIP	ERHY0009503	100 ohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1436	RES,CHIP	ERHY0013101	2.7 ohm,1/16W ,J ,1005 ,R/TP		
6	R1438	RES,CHIP	ERHY0009502	10 ohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R1439	RES,CHIP,MAKER	ERHZ0000488	4.7 ohm,1/16W ,J ,1005 ,R/TP		
6	R1446	RES,CHIP	ERHY0009506	100 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R2000	RES,CHIP,MAKER	ERHZ0000240	20 ohm,1/16W ,F ,1005 ,R/TP		
6	R2002	RES,CHIP	ERHY0009527	47 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R402	RES,CHIP	ERHY0009524	47 ohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	R403	RES,CHIP	ERHY0009505	10 Kohm,1/20W(0.05W) ,J ,0603 ,R/TP		
6	RA500	RES,ARRAY,R	ERNR0000403	10000 ohm, ohm,8 PIN,J ,1/32 W ,SMD ,R/TP		
6	SPFY00	PCB,MAIN	SPFY0136801	FR-4 ,0.8 mm,LX-bump-10 , , , , , , , , , ,		
6	U504	IC	EUSY0268101	SON2017-6 ,6 PIN,R/TP ,HALL SWITCH, Pb Free		
6	U507	IC	EUSY0295601	CSP ,409 PIN,R/TP ,WCDMA/GSM/GPRS/EDGE/HSDPA Base Band		
6	U545	IC	EUSY0303401	TFPBGA 97pin R/TP 6x6 Audio Processor+MIDI+Interface ,97 PIN,R/TP ,MP3+Melody IC AP131		
6	U551	IC	EUSY0300501	QFN ,56 PIN,R/TP ,GSM, WCDMA Single RF Transceiver, 8X8X0.9		
6	U553	IC	EUSY0300401	QFN ,48 PIN,R/TP ,WCDMA Dual Receiver IC for USA, 7X7X0.9		
6	U557	COUPLER,RF DIRECTIONAL	SCDY0003401	-22 dB,-0.2 dB,-37 dB,1.0*0.58*0.35 ,SMD ,824M ~ 849M, 4pin, Pb Free		
6	U558	COUPLER,RF DIRECTIONAL	SCDY0003403	-18 dB,-.25 dB,-33 dB,1.0*0.58*0.35 ,SMD ,1920M ~ 1980M, 4pin, Pb Free , ,SMD ,R/TP		
6	U570	IC	EUSY0308601	FLGA12V3 ,12 PIN,R/TP ,3x3 Data formatter for IR remote control		
6	U574	PAM	SMPY0014601	28 dBm,20 % ,A,-47 dBc,17 dB,3x3x1 ,SMD ,High Eff , , , , , , ,SMT ,P/TP ,		
6	U575	IC	EUSY0306402	WCSP ,39 PIN,R/TP ,YMU800-PZ , ,IC,Audio Codec		
6	U576	IC	EUSY0227203	SOT23 ,5 PIN,R/TP ,DC/DC, 600mA, 1.2V, SB120		
6	U578	PAM	SMPY0013301	dBm,43 % ,A,-40 dBc,26 dB,4x4x1.1 ,SMD ,2.1GHz, HSDPA		

11. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	U579	IC	EUSY0290701	HVSOF5 ,5 PIN,R/TP ,150mA, 2.8V, Auto Power Save LDO		
6	U581	IC	EUSY0333402	FBGA ,225 PIN,ETC ,2G(LB/128Mx16/2.7V) NAND+1G(8Mx4x32) SDRAM ,; ,IC,MCP		
6	VA516	VARISTOR	SEVY0008102	5.5 V , ,SMD ,0603		
6	VA517	VARISTOR	SEVY0008102	5.5 V , ,SMD ,0603		
6	VA518	VARISTOR	SEVY0008102	5.5 V , ,SMD ,0603		
6	VA519	VARISTOR	SEVY0008102	5.5 V , ,SMD ,0603		
6	VA522	VARISTOR	SEVY0008102	5.5 V , ,SMD ,0603		
6	VA523	VARISTOR	SEVY0008102	5.5 V , ,SMD ,0603		
6	VA524	VARISTOR	SEVY0008102	5.5 V , ,SMD ,0603		
6	VA525	VARISTOR	SEVY0008102	5.5 V , ,SMD ,0603		
6	VA526	VARISTOR	SEVY0008102	5.5 V , ,SMD ,0603		
6	X5	VCTCXO	EXSK0007801	19.2 MHz,2 PPM,10 pF,SMD ,3.3*2.5*1.0 ,2ppm at -30~+85, AFC 0.4V~2.4V, 2.8V ,; ,19.2MHz ,2PPM ,2.8V ,3.3mm ,2.5mm ,1.0mm , ,SMD ,R/TP		
6	X6	X-TAL	EXXY0015501	48 MHz,50 PPM,12 pF,40 ohm,SMD ,3.2*2.5*0.7 ,		
6	ZD4	DIODE,TVS	EDTY0009401	VMN2 ,5 V,10 W,R/TP ,1.0*0.6*0.4 ,; , ,7.82V , , ,100mW ,[empty] ,[empty] ,2P ,1		

11. EXPLODED VIEW & REPLACEMENT PART LIST

11.3 Accessory

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
4	ADEY01	DATA KIT	ADEY0001098	L704i Data kit for NTT DoCOMo	Without Color	
5	MCHZ00	COMPACT DISK	MCHZ0029503	PRINTING, (empty), , , , ,	Without Color	
3	MTAZ00	TAPE	MTAZ0127603	COMPLEX, (empty), , , , ,	Without Color	
2	APEY00	PHONE	APEY0344302		Black	
3	ACGM00	COVER ASSY,REAR	ACGM0082901		Black	
4	MCCC00	CAP,EARPHONE JACK	MCCC0041201	COMPLEX, (empty), , , , ,	Black	
4	MCCE00	CAP,RECEPTACLE	MCCE0033901	COMPLEX, (empty), , , , ,	Black	
4	MCCF00	CAP,MOBILE SWITCH	MCCF0040801	COMPLEX, (empty), , , , ,	Black	
4	MCCG00	CAP,MULTIMEDIA CARD	MCCG0007101	COMPLEX, (empty), , , , ,	Black	

Note
